

- #472 9:45 INTERACTION OF 2,3,7,8-TETRACHLORODIBENZO-p-DIOXIN AND 17 $\beta$ -ESTRADIOL IN HUMAN OVARIAN CANCER CELL LINES. C Rowlands and S Safe. Dept. Physiol. and Pharmacol., Texas A&M University, College Station, TX, and W R Miller, S Langdon, J F Smyth and S Lawrie. Imperial Cancer Research Foundation, Western General Hospital, Edinburgh, Scotland.
- #473 10:00 INDUCTION OF CYP1A1 GENE TRANSCRIPTION BY TCDD IN MDA-MB-231 HUMAN BREAST CANCER CELLS. L Arellano, V Morrison, R Rosengren and S Safe. Dept. Physiol. and Pharmacol., Texas A&M University, College Station, TX.
- #474 10:15 EFFECTS OF 2,3,7,8-TETRACHLORODIBENZO-p-DIOXIN ON ESTROGEN-INDUCED PROGESTERONE RECEPTOR LEVELS IN MCF-7 HUMAN BREAST CANCER CELLS. N Harper, R Rosengren and S Safe. Dept. Physiol. and Pharmacol., Texas A and University, College Station, TX.
- #475 10:30 UPTAKE AND ELIMINATION KINETICS OF <sup>3</sup>H-TCDD IN MEDAKA. P Schmieder, D Lothenbach, R Johnson, R Erickson. US EPA, ERL-D, Duluth, MN; and J Tietge, ASCI Corp., Duluth, MN. Sponsor: J M Dady.
- #476 10:45 CARCINOGENICITY OF 2,3,7,8-TCDD TO MEDAKA. R Johnson, US EPA, Duluth, MN; J Tietge, ASCI Corp., Duluth, MN; and S Botts, EPL Inc., RTP, NC. Sponsor: J Dady.

TUESDAY MORNING, FEBRUARY 25  
CONVENTION CENTER—ROOM 605

## POSTER DISCUSSION SESSION: CYTOCHROME P-450: FACTORS INFLUENCING EXPRESSION

**Chairpersons:** Curtis Omiecinski, University of Washington, Seattle, WA and Raymond Novak, Wayne State University, Detroit, MI

**Displayed:** 8:30 a.m.—11:30 a.m.

**Discussion:** 9:30 a.m.—11:30 a.m.

- #477 FACTORS AFFECTING THE EXPRESSION OF A NOVEL POLYCYCLIC AROMATIC HYDROCARBON-ACTIVATING CYTOCHROME P-450 IN CELL CULTURE. D L Alexander, K F Sachsenmeier, M Christou, C R Jefcoate. Department of Pharmacology and Environmental Toxicology Center, University of Wisconsin, Madison, WI.
- #478 PHENOBARBITAL INDUCTION OF CYTOCHROMES P450 2B1, 2B2 AND 3A1 IN PRIMARY RAT HEPATOCYTES CULTURED IN A MATRIGEL SANDWICH. J S Sidhu, F M Farin, and C J Omiecinski. Dept. of Environmental Health, University of Washington, Seattle, WA.
- #479 IDENTIFICATION OF THE PROMOTER REGION OF THE NADPH CYTOCHROME P-450 REDUCTASE GENE. K A O'Leary, T W Beck, and C B Kasper. McArdle Laboratory for Cancer Research, University of Wisconsin, Madison, WI. Sponsor: H C Pitot.
- #480 RT-PCR DETECTION OF CYP1A1 AND 1A2 EXPRESSION IN CONTROL AND PYRIDINE (PY) EXPOSED RAT NASAL TISSUE. S L Reddy, J Hotchkiss, A R Dahl and R F Novak. Institute of Chemical Toxicology, Wayne State University, Detroit, MI; and The Inhalation Toxicology Research Institute, Albuquerque, NM.
- #481 DIFFERENTIAL EFFECTS OF PYRIDINE (PY) THIAZOLE (TH) AND PYRAZINE (PZ) ADMINISTRATION ON PROTEIN EXPRESSION IN RAT HEPATIC AND RENAL MICROSOMES. H Kim, S C Brooks, C Wang and R F Novak. The Institute of Chemical Toxicology, Wayne State University, Detroit, MI.
- #482 EXPRESSION OF CYP2B GENES IN TUMOR AND NORMAL TISSUES FROM LUNG CANCER PATIENTS. M Czerwinski, S Adelberg, T L McLemore and F J Gonzalez. Laboratory of Molecular Carcinogenesis, National Cancer Institute, National Institutes of Health, Bethesda, MD; St. Joseph Hospital, Parris, TX. Sponsor: G S Yost.
- #483 FLOW CYTOMETRY REVEALS HETEROGENEOUS EXPRESSION OF CYTOCHROME P450IA1/IA2 IN CD-1 MOUSE EPIDERMIS. K L Stauber, J D Laskin, P E Thomas, D L Laskin, A H Conney. Joint Graduate Program in Toxicology, UMDNJ/Rutgers University and Laboratory for Cancer Research, Rutgers University, Piscataway, NJ.
- #484 GLUCAGON AND ISOBUTYLMETHYLXANTHINE INCREASE CAMP LEVELS AND RATES OF CYTOCHROME P450-DEPENDENT PENTOXYPHENOXAZONE O-DEPENTYLATION IN CULTURED RAT CONCEPTUSES. Q P Lee, and M R Juchau. Dept. of Pharmacology, University of Washington, Seattle, WA.
- #485 UTILIZATION OF THE POLYMERASE CHAIN REACTION FOR DETECTION OF CYP1A1 mRNA IN RAT CONCEPTAL TISSUES DURING ORGANOGENESIS. H L Yang, B D Zelus, and M R Juchau. Dept. of Pharmacology, University of Washington, Seattle, WA.
- #486 REGULATION OF P450IA1 EXPRESSION BY ALKYL METHYLENEDIOXYBENZENES. A Flores<sup>1</sup>, M S Denison<sup>2</sup> and C Marcus<sup>1</sup>. <sup>1</sup>Dept. Pharmacology and Toxicology, Purdue Univ., W. Lafayette, IN; <sup>2</sup>Dept. Biochemistry, Michigan State Univ., E. Lansing, MI.
- #487 P450 ISOZYME ACTIVITIES IN WB344 CELLS AS MEASURED BY FLUORESCENT PROBE SUBSTRATES. B L Hancock, and S R Channel. Toxicology Division (OL-AL/OET), Armstrong Laboratory, WPAFB, OH. (This abstract will be presented as #1609A Thursday afternoon in the Cytochrome P-450 Poster Session.)



- #502 **ABSORPTION, DISTRIBUTION AND ELIMINATION OF OLESTRA AFTER ORAL ADMINISTRATION IN RATS.** *K Miller, K Lawson, B Madison, D Tallmadge, P Hudson, J Okenfuss, M Blair, J Thorstenson, P Vanderploeg.* The Procter & Gamble Company, Cincinnati, OH and International Research Development Corporation, Mattawan, MI.
- #503 **TOXICITY EVALUATION OF 2-CHLOROETHYL LINOLEATE IN RATS.** *B S Kaphalia, M F Khan, P J Boor, and G A S Ansari.* Department of Pathology, University of Texas Medical Branch, Galveston, TX.
- #504 **METHODOLOGY FOR CONDUCTING SUCRALOSE TASTE TESTING STUDIES.** *E N Lodato.* Safety and External Affairs Dept., McNeil Specialty Products Co., New Brunswick, NJ. Sponsor: *L A Goldsmith*
- #505 **INVESTIGATION IN RATS ON THE ORAL ACCEPTABILITY OF THE NEW LOW-CALORIE SWEETENER, SUCRALOSE.** *S W Mann<sup>1</sup>, S J Amyes<sup>2</sup> and P Aughton<sup>2</sup>.* Safety and External Affairs Dept., McNeil Specialty Products Co., New Brunswick, NJ<sup>1</sup> and Life Science Research, Ltd., Eye, Suffolk, England<sup>2</sup>. Sponsor: *L A Goldsmith.*
- #506 **SUCRALOSE, A SUBSTITUTED DISACCHARIDE THAT TASTES SWEET BUT IS NOT TREATED AS A CARBOHYDRATE *IN VIVO*.** *J W Kille and V L Grotz.* McNeil Specialty Products Co., New Brunswick, NJ.
- #507 **TOXICITY PROFILE FOR A HYDROGENATED CYCLODIENE PETROLEUM HYDROCARBON RESIN.** *D A Edwards, A E Chin, S G Hentges, T M Soranno.* Exxon Biomedical Sciences Inc., East Millstone, NJ. Sponsor: *G F Egan.*
- #508 **MUTAGENICITY STUDIES OF KOJIC ACID.** *C I Wei, T S Huang, and S Y Fernando.* Food Science and Human Nutrition Department, University of Florida, Gainesville, FL. Sponsor: *M D Cohen.*
- #509 **EFFECT OF ETHANOL CO-ADMINISTRATION OR PRETREATMENT ON THE METABOLISM OF ETHYL CARBAMATE (EC) IN MALE FISCHER 344 RATS AND MALE B6C3F<sub>1</sub> MICE.** *A A Nomeir, P M Markham, B Ghanayem\* and J Jouzaitis.* Arthur D Little Inc., Cambridge, MA and \*NIEHS, RTP, NC.
- #510 **INHIBITION OF BENZO[a]PYRENE-INDUCED MOUSE GENOTOXICITY BY NATURALLY OCCURRING ORGANOSULFUR COMPOUNDS.** *H S Marks, J L Anderson, and G S Stoewsand.* Dept. of Food Science and Technology, Cornell University, Geneva, NY.
- #511 **QUANTITATIVE STEREOLOGICAL ANALYSIS OF PHENETHYL ISOTHIOCYANATE-INDUCED EFFECTS IN RAT LIVER.** *G Adam-Rodwell<sup>2</sup>, R H Gray<sup>1</sup>, D Maris<sup>1</sup>, J Haskins<sup>1</sup>, G D Stoner<sup>2</sup>.* Department of Environmental and Industrial Health, The University of Michigan, Ann Arbor, MI; and Department of Pathology, Medical College of Ohio, Toledo, OH.
- #512 **THE HISTOLOGIC AND SERUM BIOCHEMICAL EFFECTS OF 3-METHYLSULFINYLPROPYLSISOTHIOCYANATE (3MSP) IN THE F344 RAT.** *A M Kore<sup>1</sup> and M A Walling<sup>2</sup>.* Depts. of Veterinary Biosciences<sup>1</sup> and Veterinary Pathobiology<sup>2</sup>, University of Illinois College of Veterinary Medicine, Urbana, IL. Sponsor: *V R Beasley.*
- #513 **EFFECT OF DIETARY PYRROLIZIDINE (SENECIO) ALKALOIDS ON TISSUE DISTRIBUTION OF COPPER AND VITAMIN A IN THE BROILER CHICKEN.** *J Y Huan, P R Cheeke, R R Lowry, H S Nakae, S P Snyder, and P D Whanger.* Dept. of Animal Sciences, Veterinary Diagnostic Laboratory and Department of Agricultural Chemistry, Oregon State University, Corvallis, OR.
- #514 **GENOTOXICANTS OF HARD WOOD DUST.** *E Nelson.* Institute of Hygiene and Occupational Medicine, Univ. Medical Center, Essen, FRG.
- #515 **THE NEUROLOGIC EFFECTS OF SOLANUM DIMIDIATUM IN MICE AFTER CHRONIC DOSING.** *K L Hueske and E M Bailey.* Dept. of Vet. Phys. and Phar., Texas A&M Univ., College Station, TX; Radian Corp., Austin, TX. Sponsor: *E J Hixson.*
- #516 **CHARACTERIZATION OF THE TOXIN-RECEPTOR INTERACTION IN THE INSECTICIDAL TOXINS DERIVED FROM BACTERIA.** *S S Gill, E A Cowles, H Yunovitz, P Pietrantonio and Y M Yu.* Environmental Toxicology Graduate Program, University of California, Riverside, CA.
- #517 **STRUCTURE AND FUNCTION RELATIONSHIPS OF THE 72kDa TOXIN OF MOSQUITOCIDAL *BACILLUS THURINGIENSIS*.** *C Chang, S M Dai, and S S Gill.* Environmental Toxicology Graduate Program, University of California, Riverside, CA.
- #518 ***IN VITRO* CYTOTOXICITY OF FALCARINOL.** *J Avalos, R Rasmussen, and E Rodriguez.* Environmental Toxicology Program, Department of Community and Environmental Medicine, University of California, Irvine, CA. Sponsor: *D B Menzel.*
- #519 **COMPARISON OF DIFFERENT PROCEDURES FOR INACTIVATION/REMOVAL OF NATURAL PRODUCTS FROM WATER.** *<sup>1</sup>R W Wannemacher, <sup>1</sup>R E Dinterman, <sup>1</sup>W L Thompson, <sup>2</sup>W D Burrows, and <sup>2</sup>M O Schmidt.* <sup>1</sup>USAMRIID and <sup>2</sup>USABRD, Fort Detrick, Frederick, MD.
- #520 **DEVELOPMENT OF MONOCLONAL ANTIBODIES TO AFLATOXIN-B<sub>1</sub>.** *C A Kamps, L F Kubena, G W Ivie, and J R DeLoach.* USDA-ARS-FAPRL, College Station, TX. Sponsor: *A B Astroff.*
- #521 **FUMONISIN INHIBITION OF SPHINGOLOPID BIOSYNTHESIS AND CYTOTOXICITY ARE CORRELATED IN LLC-PK<sub>1</sub> CELLS.** *R T Reilly, H S Yoo, W P Norred, E Wang, and A H Merrill.* USDA-ARS, Athens, GA, and Emory University, Atlanta, GA.
- #522 **THE INFLUENCE OF ALGAE EXTRACTS ON CHINESE HAMSTER CELLS IN CONDITIONS OF VARYING PHYSIOLOGICAL STRESS.** *A M DiLorenzo, M Correa, and A Agilone.* Biology Department, Montclair State College, Upper Montclair, NJ. Sponsor: *J Lipman.*

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- #523 **SUBCHRONIC TOXICOLOGICAL INVESTIGATIONS OF *FUSARIUM MONILIFORME*-CONTAMINATED CORN, CULTURE MATERIAL AND AMMONIATED CULTURE MATERIAL.** *K A Voss, W P Norred, and C W Bacon.* Toxicology and Mycotoxin Research Unit, ARS/USDA, Athens, GA.
- #524 **STUDIES ON THE USE OF BREFELDIN A AND 3'-AZIDO-3'-DEOXYTHYMIDINE TO BLOCK THE TOXIC EFFECTS OF RICIN *IN VITRO*.** *W Thompson and J G Pace.* US Army Medical Research Institute of Infectious Diseases, Frederick, MD.  
Sponsor: *R W Wannemacher, Jr.*
- #525 **MODULATION OF RICIN TOXICITY IN MICE.** *D F Muldoon and S J Stohs.* Depts of Pharmacology and Pharmaceutical Sciences, Creighton University, Omaha, NE.

**TUESDAY MORNING, FEBRUARY 25  
CONVENTION CENTER—EXHIBIT HALL**

## **POSTER SESSION: PHARMACEUTICALS**

**Chairpersons:** Chester L. Leach, 3M, St. Paul, MN and Jack A. Reynolds, Bristol-Myers Co., Syracuse, NY

**Displayed:** 8:30 a.m.—11:30 a.m.

**Attended:** 10:00 a.m.—11:30 a.m.

- #526 **SUBCHRONIC TOXICITY OF LY213829 IN THE FISCHER 344 RAT FOLLOWING EXPOSURE BY GAVAGE AND IN THE DIET.** *K I MacKenzie, D C Mullins, P S Foxworthy, P I Eacho, L F Fisher and G K Hanasono.* Toxicology Research Laboratories, Lilly Research Laboratories, A Division of Eli Lilly and Co., Greenfield, IN.
- #527 **ACUTE INHALATION TOXICITY OF DIETHYLCARBAMAZINE CITRATE IN RATS.** *G L Sprague, C J Hardy, and G C Jackson.* SmithKline Beecham, Philadelphia, PA and Huntingdon Research Centre, Cambridgeshire, UK.
- #528 **PRECLINICAL TOXICITY OF CI-986, A NOVEL ANTI-INFLAMMATORY COMPOUND.** *D G Robertson, K M Walsh, L A Dethloff, R S Sigler, M A Dominick and E R Urda.* Path. and Exp. Tox., Parke-Davis Pharm. Res. Div., Warner-Lambert Co., Ann Arbor, MI.
- #529 **TOXICITY OF SHORT-TERM DIETARY ADMINISTRATION OF PRIMACLONE IN RATS AND MICE.** *WC Eastin\*, M Hejtman-cik, S Graves, A Singer, J Toft, and P Kurtz.* Battelle, Columbus, OH and \*NIEHS, RTP, NC.
- #530 **SINGLE AND MULTIPLE DOSE TOXICITY OF BENZOPORPHYRIN DERIVATIVE MONOACID RING A IN RATS AND DOGS.** *D L Novicki, E Lindemann and S R Wolford.* Medical Research Division, American Cyanamid Co., Pearl River, NY and B Kelly, Quadra Logic Technologies, Inc., Vancouver, BC, Canada.
- #531 **TOXICITY OF MULTIPLE INTRAVENOUS DOSES OF CHOLERA TOXIN (NSC-629801) IN RATS AND DOGS.** *E M Daniel<sup>1</sup>, J T Liao<sup>1</sup>, T N Merriman<sup>1</sup>, D E Rodwell<sup>1</sup>, B L Osborn<sup>2</sup>, and J E Tomaszewski<sup>2</sup>.* <sup>1</sup>Springborn Laboratories, Inc., Spencerville, OH, and <sup>2</sup>National Cancer Institute, Bethesda, MD.
- #532 **SUBCHRONIC DOSED-FEED TOXICITY STUDY OF OXAZEPAM IN SWISS-WEBSTER AND B6C3F<sub>1</sub> MICE.** *J D Johnson, G Freeman, R Persing, M Ryan, D Reichelderfer, and J Bucher\*.* Battelle, Columbus, OH and \*NIEHS, RTP, NC.
- #533 **THE SUBCHRONIC TOXICITY OF A NEW SEROTONIN REUPTAKE INHIBITOR IN DOGS AND RATS.** *D A Buenger, M P Roesner, and M N Novilla.* Toxicology Research Laboratories, Eli Lilly Company, Greenfield, IN. Sponsor: *M J Vodcnik.*
- #534 **COMPARISON OF THE ORAL AND INTRAVENOUS SYSTEMIC TOXICITY OF CK-3368, A BILE ACID SEQUESTRANT, IN THE RAT.** *N Bower, G Hamilton, K R Stevens, R F McConnell\* and L Mylecraine.* Berlex Laboratories, Cedar Knolls, NJ, \*Consulting Pathology Services, Flemington, NJ.
- #535 **SUBCHRONIC TOXICITY OF IBUPROFEN/HYDROCHLOROTHIAZIDE IN SPRAGUE-DAWLEY RATS.** *H Knapp, J Zyracki, K Hobbs and W Busey.* Bristol-Myers Products, Hillside, NJ and Experimental Pathology Laboratories, Inc., Herndon, VA.
- #536 **ACUTE INTRAVENOUS TOXICITY OF RMP-7, A BLOOD-BRAIN BARRIER PERMEABILIZER, IN RODENTS AND DOGS.** *C P LeBel, D P Rosenbaum\*, and C A Gloff.* Alkermes, Inc., and \*Arthur D. Little, Inc., Cambridge, MA.
- #537 **14-DAY INTRAVENOUS TOXICITY OF RMP-7, A BLOOD-BRAIN BARRIER PERMEABILIZER, IN RAT AND DOG.** *D P Rosenbaum\*, C P LeBel, and C A Gloff.* \*Arthur D. Little, Inc., and Alkermes, Inc., Cambridge, MA.
- #538 **SINGLE AND MULTIPLE DOSE TOXICITY OF A HYPOXIC CYTOTOXIC AGENT (WIN 59075) IN RATS.** *C Wimberly, K Gossett, J Cornacoff, Y Greener and J R Hincks.* Toxicology Dept., Sterling Research Group, Rensselaer, NY.
- #539 **TWO WEEK INHALATION STUDY IN RATS WITH METHOTREXATE.** *C E Ulrich and M E Cosenza.* International Research and Development Corp./American Cyanamid Co., Medical Research Division, Pearl River, NY. Sponsor: *D E Johnson.*
- #540 **TWO WEEK DOG INHALATION STUDY WITH METHOTREXATE.** *M E Cosenza and C E Ulrich.* International Research and Development Corp./American Cyanamid Co., Mattawan, MI. Sponsor: *D E Johnson.*
- #541 **DECREASED SERUM OSTEOCALCIN CONCENTRATIONS IN HORSES GIVEN PARENTERAL DEXAMETHASONE.** *R Geor<sup>1</sup>, E Hope<sup>2</sup>, and M Murphy<sup>2</sup>.* Clinical and Population Sciences<sup>1</sup> and Veterinary Diagnostic Medicine<sup>2</sup>, College of Veterinary Medicine, University of Minnesota, St. Paul, MN.

- #542 EVALUATION OF THE PRECLINICAL TOXICOLOGIC PROFILE OF 3'-DEOXY 3'FLUOROTHYMIDINE (FLT). K Seethaler, R Lewis, D E Johnson, D Novicki, R Schroer. American Cyanamid Company, Medical Research Division, Pearl River, NY.
- #543 REPAIR OF ILLUDIN INDUCED DNA DAMAGE REQUIRES INVOLVEMENT OF ERCC-2 AND ERCC-3 DNA REPAIR PROTEINS PRIOR TO ERCC-1 ACTION. T C McMorris and M J Kelner. Depts. of Chemistry and Pathology, University of California, San Diego, CA.
- #544 ACUTE CARDIOTOXICITY OF NUCLEOSIDE ANALOGS FddA AND FddI IN RATS. C R Comerkesi, W A Kelly, T J Davidson, W A Warner, L D Hopper, and F B Oleson. Bristol-Myers Squibb Company, Syracuse, NY.
- #545 SENSITIVITY DIFFERENCES TO ADRIAMYCIN BETWEEN PRIMARY TUMOR CELLS AND TUMOR CELLS RECURRENT AFTER IRRADIATION. A R Yusufji, T Furgason, H Maczawa, J Begley, M Urano. Dept of Rad. Med. Grad. Center for Toxicology, University of Kentucky, Lexington, KY. Sponsor: T Tobin.
- #546 HEPATOTOXICITY OF 'DESIGNER' AMPHETAMINES IN MICE. H S Buttar, J Chan, J Moffatt, C Bura, and B C Foster. Bureau of Drug Research, Health Protection Branch, Ottawa, Ontario, Canada.
- #547 EVALUATION OF RESPIRATORY FREQUENCY (f) IN MICE FOLLOWING INFUSION OF BLEOMYCIN (BLE) AND INHALATION OF AN AEROSOLIZED BLEOMYCIN-BINDING PROTEIN (SH-BLE). A Pearson, K Detwiler, R Vijayaghavan, M Stock, Y Alarie, J S Lazo, T Calmels, D Hoyt, and M Schaper. University of Pittsburgh, Pittsburgh, PA.
- #548 SPECIES DIFFERENCES IN THERMOREGULATION IN RODENTS BY INTERLEUKIN-1 (IL-1). J M Lipman, C A Mitchell, J A Reichert and T J Hayes. Investigative Toxicology, Department of Toxicology and Pathology, Hoffmann-La Roche Inc., Nutley, NJ.
- #549 COMPARATIVE SKIN PHOTOTOXICITY OF BENZOPORPHYRIN DERIVATIVE MONOACID RING A AND PHOTOFRIN® PORFIMER SODIUM IN MICE. S R Wolford, E Lindemann and D L Novicki. Medical Research Division, American Cyanamid Co., Pearl River NY; and B Kelly, Quadra Logic Technologies Inc., Vancouver, BC, Canada.
- #550 TREATMENT OF LYMPHOMA-BEARING DOGS WITH ERYTHROCYTE-ENCAPSULATED ADRIAMYCIN: EFFECT ON ACUTE GASTROINTESTINAL TOXICITY AND TUMOUR GROWTH. B Astroff<sup>1</sup>, W Satterfield<sup>2</sup>, A Gasparini<sup>3</sup>, C Matherne<sup>2</sup>, A DeFlora<sup>3</sup> and J DeLoach<sup>1</sup>. <sup>1</sup>USDA-ARS, FAPRL, College Station, TX; <sup>2</sup>University of Texas Cancer Center Veterinary Resources, Bastrop, TX; <sup>3</sup>Universita Degli Studi Di Genova, Genova, Italy.
- #551 PHARMACOKINETICS OF THE ANTIVIRAL AGENT CARBOCYCLIC 3-DEAZAADENOSINE. R A Coulombe, Jr<sup>1</sup>, R P Sharma<sup>1</sup> and J W Huggins<sup>2</sup>. <sup>1</sup>Toxicology Program, Utah State University, Logan, UT, and <sup>2</sup>U.S. Army Medical Research Institute for Infectious Diseases, Fort Detrick, Frederick, MD.
- #552 THE VALUE OF RETROSPECTIVE ANALYSIS OF TOXICITY TESTING. C E Lumley, C Parkinson, J A N McAuslane and S R Walker. Centre for Medicines Research, Carshalton, Surrey, UK. Sponsor: S Gangoli.
- #553 GASTRIC MORPHOLOGIC CHANGES AND THEIR REVERSIBILITY IN RATS AND DOGS TREATED WITH RO 24-0238 (RO) AN ANTAGONIST OF PLATELET ACTIVATING FACTOR (PAF). C B Eliahou, A Davidovich, J H Edgcomb, Z Ruben and K D Dammers. Dept. of Toxicology and Pathology, Hoffmann-La Roche, Inc., Nutley, NJ.
- #554 PHARMACODYNAMIC BASIS OF THE TOXICITY OF MSN: A NEW CARDIAC GLYCOSIDE FROM MANSONIA ALTISSIMA WITH NOVEL PHARMACOLOGICAL ACTIONS. F Guede-Guina, J M Maixent, M O Smith, K J Aka, S C Tsai, R F Ochillo. Pharmacology and Toxicology, Biomedical Research Center, Xavier University, New Orleans, LA.

TUESDAY MORNING, FEBRUARY 25  
CONVENTION CENTER—EXHIBIT HALL

## POSTER SESSION: DISPOSITION

Chairpersons: Patrick I. Eacho, Eli Lilly & Company, Greenfield, IN, and Dennis Petersen, University of Colorado, Boulder, CO

Displayed: 8:30 a.m.—11:30 a.m.

Attended: 8:30 a.m.—10:00 a.m.

- #555 INVESTIGATION OF STRUCTURE-ACTIVITY RELATIONSHIPS BETWEEN DIFFERENT INSULIN SENSITIZING ENHANCERS (ISE) USING ETHOXY- AND PENTHOXY- ANALOGUES OF PHENOXAZONE. S J Glass, K K Schmigel, and R B L van Lier. Toxicology Research Laboratories, Lilly Research Laboratories, A Division of Eli Lilly and Company, Greenfield, IN.
- #556 VANCOMYCIN AND INSULIN PHARMACOKINETICS AND BIOAVAILABILITY FOLLOWING ILEAL, COLONIC, AND RECTAL ADMINISTRATION IN RATS. R S Geary and H W Schlameus. Department of Applied Chemistry and Chemical Engineering, Southwest Research Institute, San Antonio, TX. Sponsor: W R Rogers.
- #557 EXCRETION AND TISSUE DISTRIBUTION OF RADIOACTIVITY IN RATS FOLLOWING SINGLE AND MULTIPLE INTRAVENOUS DOSES OF <sup>14</sup>C-LY146032. W A Althaus, J S Kasher, R C Pohland, S L Weinberg, and R B L van Lier. Lilly Research Laboratories, A Division of Eli Lilly and Company, Greenfield, IN.

- #558 **TISSUE DISTRIBUTION OF  $^{14}\text{C}$ -LOMETREXOL (LY264618) IN MICE WITH C3H MAMMARY CARCINOMAS STUDIED BY WHOLE-BODY AUTORADIOGRAPHY.** R C Pohland, J L Hoppes, J M Beck, T Alati, and G B Grindey. Toxicology Research Laboratories, Lilly Research Laboratories, Eli Lilly and Company, Greenfield, IN.
- #559 **COMPARATIVE METABOLISM AND DISPOSITION OF NALIDIXIC ACID (NA) IN FISCHER 344 RATS AND B6C3F<sub>1</sub> MICE.** P M Markham, B Ghanayem\* and A A Nomeir. Arthur D Little Inc, Cambridge, MA and \*NIEHS, RTP, NC.
- #560 **UPTAKE OF AMIODARONE BY LUNG CELLS ISOLATED FROM FISCHER AND WISTAR RATS.** B Wilson, and M Lipman. Temple University School of Medicine, and Albert Einstein Medical Center, Philadelphia, PA. Sponsor: A Hubbard.
- #561 **PHARMACOKINETICS AND DISPOSITION OF BW 1370U87 IN THE RAT: A NOVEL MAO-A INHIBITOR.** I S Silver, R M Wurm, T E Johnson, W A Wargin, R M Welch and J C Harrelson. Wellcome Research Laboratories, Division of Pharmacokinetics and Drug Metabolism, RTP, NC.
- #562 **ABSORPTION AND DISPOSITION KINETICS OF WR 238,605, A CANDIDATE ANTIMALARIAL AGENT, IN RHESUS MONKEYS.** H Chung, J D Baggot, D Johnson, N Cone, P Brennan and A Buckpitt. Division of Experimental Therapeutics, Walter Reed Army Inst. of Research, Washington, DC and Veterinary Pharmacology and Toxicology and California Regional Primate Research Center, UC Davis, Davis, CA.
- #563 **ASPIRIN ORAL CO-ADMINISTRATION WITH SALICYLAMIDE IN RATS: A THERAPEUTICALLY-FAVORABLE PHARMACOKINETIC INTERACTION.** M Rizk, F Curro, and M S Abdel-Rahman. UMDNJ, New Jersey Medical School, Newark, NJ and Block Drug Company, Inc., Jersey City, NJ.
- #564 **HYDROQUINONE MONOSULFONATE ABSORPTION, DISTRIBUTION, METABOLISM AND ELIMINATION IN MALE RATS.** P J Deisinger and J C English. Health and Environment Laboratories, Eastman Kodak Company, Rochester, NY. Sponsor: J L O'Donoghue.
- #565 **DISPOSITION AND METABOLISM OF 1,1,2,2-TETRABROMOETHANE IN F344/N RATS AFTER GAVAGE ADMINISTRATION.** C H Kennedy, K B Cohen, A R Dahl, and R F Henderson. Inhalation Toxicology Research Institute, Albuquerque, NM.
- #566 **EFFECT OF VAPOR CONCENTRATION ON THE DISPOSITION OF ISOBUTENE.** P J Sabourin, W E Bechtold, M D Hoober and R F Henderson. Inhalation Toxicology Research Institute, Albuquerque, NM.
- #567 **COMPARATIVE METABOLISM AND DISPOSITION OF METHACRYLONITRILE AND ACRYLONITRILE IN RATS.** I M Sanchez and B I Ghanayem. NIEHS, RTP, NC.
- #568 **METABOLISM AND DISPOSITION OF ACETYL TRIBUTYL CITRATE IN MALE SPRAGUE-DAWLEY RATS.** M F Hiser, R Markley, R H Reitz and J L Niesma. Toxicology Research Laboratory, Dow Chemical Company, Midland, MI.
- #569 **DISPOSITION OF RADIOACTIVITY IN FISCHER 344 RATS AFTER INTRAVENOUS, ORAL, DERMAL AND INHALATION ROUTES OF  $^{14}\text{C}$ -METHYL t-BUTYL ETHER (MTBE) ADMINISTRATION.** E S Ferdinandi<sup>1</sup>, W O'Neil<sup>1</sup>, D Pilon<sup>1</sup>, G Lulham<sup>1</sup>, M Lalonde<sup>1</sup>, N P Skoulis<sup>2</sup> and S Ridlon<sup>2</sup>. <sup>1</sup>Bio-Research Laboratories Ltd., Montreal, Canada, and <sup>2</sup>MTBE Task Force of Oxygen Fuels Association, Washington, DC.
- #570 **2-HYDROXYETHYL ACRYLATE (HEA): PHARMACOKINETICS IN MALE FISCHER 344 RATS FOLLOWING ADMINISTRATION BY FOUR ROUTES.** J Y Domoradzki, N L Freshour, F A Smith, M D Dryzga, M F Hiser and J M Waechter. H & ES, Dow Chemical Company, Midland, MI. Sponsor: A M Schumann.
- #571 **CUTANEOUS PENETRATION OF POLYMER JR400, GLUTARALDEHYDE AND ETHYLHEXANEDIOL IN RATS: COMPARISON TO IN VITRO PENETRATION USING RAT AND HUMAN SKIN.** M J Tallant, J L Beskitt, S W Frantz and B Ballantyne. Bushy Run Research Center/Union Carbide Chemicals and Plastics Company Inc., Export, PA.
- #572 **IN VITRO PHARMACOKINETICS AND STRUCTURE-TOXICITY OF SUBSTITUTED PHENOLS IN DEVELOPMENTAL TOXICITY ASSAY.** H L Fisher<sup>1</sup>, M R Sumler<sup>2</sup>, S P Shrivastava<sup>2</sup>, B C Edwards<sup>2</sup>, L A Oglesby<sup>2</sup>, M T Ebron-McCoy<sup>1</sup>, F Copeland<sup>1</sup>, J Kavlock<sup>1</sup>, L L Hall<sup>1</sup>. <sup>1</sup>HERL/U.S. EPA, and <sup>2</sup>METI, RTP, NC.
- #573 **COMPARATIVE METABOLISM AND DISPOSITION OF ETHOXYQUIN IN RATS AND MICE.** J M Sanders, L T Burka and B Matthews. NIEHS, RTP, NC.
- #574 **ALLYLNITRILE: BIODISTRIBUTION AND ROLE OF VEHICLES IN ITS TOXICITY IN RATS.** J Piper, B Ybarra, M Y H Farooqui. Division of Environmental Toxicology, Department of Biology, The University of Texas-Pan American, Edinburg, TX.
- #575 **THE EFFECT OF EXPOSURE METHOD ON THE REACTIVITY OF TOLUENE DIISOCYANATE.** A L Kennedy, C Timchenko and W E Brown. Carnegie Mellon Univ., Pittsburgh, PA and Dow Chemical Company, Midland, MI.
- #576 **TISSUE DISTRIBUTION AND EXCRETION OF ANTHRAQUINONE IN THE MALE FISCHER-344 RAT.** S M Winter, M J Kattig, M B Steup and I G Sipes. Dept. of Pharmacology/Toxicology, Univ. of Arizona, Tucson, AZ.
- #577 **DISPOSITION OF 4-VINYL-1-CYCLOHEXENE DIEPOXIDE (VCD) IN FEMALE F-344 RATS.** K L Salyers, W Zheng, S M Winter, and I G Sipes. Dept. of Pharmacology and Toxicology, Univ. of Arizona, AZ.
- #578 **BILIARY AND NONBILIARY ELIMINATION OF  $^{14}\text{C}$  COMPOUND(S) FOLLOWING IV  $^{14}\text{CCl}_4$ .** D A Page and G P Carlson. Pharmacol. and Toxicol., Sch. Pharmacy, Purdue Univ., West Lafayette, IN.

- #579 **DISPOSITION AND PHARMACOKINETICS OF CUMENE IN F-344 RATS FOLLOWING ORAL, IV or INHALATION EXPOSURE.** A R Jeffcoat<sup>1</sup>, D P Coleman<sup>1</sup>, N F Gaudette<sup>1</sup>, K I Darmer, Jr.<sup>2</sup>, P W Beatty<sup>3</sup>, and R W Slaughter<sup>1</sup>. <sup>1</sup>Research Triangle Institute, RTP, NC; <sup>2</sup>Shell Oil, Co., Houston, TX; <sup>3</sup>Chevron Research and Technology Co., Richmond, CA.
- #580 **CARBOFURAN METABOLISM AND TOXICITY IN THE ISOLATED PERFUSED RAT LUNG.** U A Pillai, L N Ace, R M Dick, and P W Ferguson. School of Pharmacy, Northeast Louisiana University, Monroe, LA.
- #581 **AN INVESTIGATION OF HEPATIC ALIESTERASES AND PARAOXON INTOXICATION IN  $\beta$ -NAPHTHOFLAVONE TREATED RATS.** A M Watson and J E Chambers. College of Veterinary Medicine, Mississippi State University, Mississippi State, MS.
- #582 **CHLORDECON PRETREATMENT ALTERS [<sup>14</sup>C] CHOLESTEROL DISPOSITION IN RATS.** D J Gilroy, H M Carpenter, and L R Curtis. Oak Creek Laboratory of Biology, Department of Fisheries and Wildlife, Oregon State University, Corvallis, OR.
- #583 **CHRONIC DIELDRIN EXPOSURE INCREASES HEPATIC DISPOSITION AND BILIARY EXCRETION OF [<sup>14</sup>C] DIELDRIN IN RAINBOW TROUT.** L R Curtis, D J Gilroy, L S Fredrickson, and H M Carpenter. Oak Creek Laboratory of Biology, Department of Fisheries and Wildlife, Oregon State University, Corvallis, OR.
- #584 **SALIVARY LEVELS OF COTININE AND WOUND HEALING IN POST SURGICAL PATIENTS: A PRELIMINARY REPORT.** S D Stanley, M Huffman, D Sadove, N Cole, J N Diana, H H Tai, C G Gairola, and T Tobin. Graduate Center for Toxicology, Tobacco and Health Research Institute, University of Kentucky, Lexington, Kentucky.
- #585 **URINARY EXCRETION OF COTININE IN CHRONICALLY CIGARETTE SMOKE-EXPOSED MICE.** C G Gairola, S D Stanley, J N Diana, H H Tai, and T Tobin. Graduate Center for Toxicology, Tobacco and Health Research Institute, University of Kentucky, Lexington, KY.
- #586 **DISPOSITION OF NITROFURANTOIN IN THE CHANNEL CATFISH.** G R Stehly and S M Plakas. Division of Seafood Research, Food and Drug Administration, Dauphin Island, AL.
- #587 **EFFECT OF DIABETES ON METABOLISM AND TOXICITY OF  $\mu$ -NITROANISOLE IN SPRAGUE-DAWLEY RATS.** V V Kunjathoor, T E Buckles, U A Pillai, P J Medon, and P W Ferguson. School of Pharmacy, Northeast Louisiana University, Monroe, LA.
- #588 **BIOAVAILABILITY OF MICROENCAPSULATED CINNAMALDEHYDE IN F344 RATS.** J Yuan, M Dieter. NIEHS/NTP, RTP, NC. Sponsor: R S Chhabra.

**TUESDAY MORNING, FEBRUARY 25**  
**CONVENTION CENTER—EXHIBIT HALL**

## **POSTER SESSION: BIOTRANSFORMATION: CONJUGATION REACTIONS**

**Chairperson:** John B. Watkins, III, Indiana University, Bloomington, IN

**Displayed:** 8:30 a.m.—11:30 a.m.  
**Attended:** 10:00 a.m.—11:30 a.m.

- #589 **EFFECTS OF SPECIES ON THE FORMATION OF BROMOTHIOCATECHOLS AND BROMOBENZENE TOXICITY.** K Lertratanangkoon. University of Texas Medical Branch, Galveston, TX. Sponsor: J P Saunders.
- #590 **MOLECULAR CLONING AND SEQUENCING OF A MURINE CYTOSOLIC EPOXIDE HYDROLASE c-DNA.** D F Grant and B D Hammock. Depts. of Entomology and Environmental Toxicology, Univ. of California, Davis, CA.
- #591 **INDUCTION OF MICROSOMAL EPOXIDE HYDROLASE BY IMIDAZOLE ANTIMYCOTIC AGENTS IN RATS: EXPRESSION AND REGULATION.** S G Kim and Y H Kim. Institute of Chemical Toxicology, Wayne State University, Detroit, MI.
- #592 **EXPRESSION OF MICROSOMAL EPOXIDE HYDROLASE (mEH) IN PRIMARY CULTURES OF HUMAN UMBILICAL VEIN ENDOTHELIAL CELLS (HUVES).** F M Farin, D Neil, T Pohlman, and C J Omiecinski. Departments of Environmental Health, and Surgery, University of Washington, Seattle, WA.
- #593 **EFFECT OF SULFINATES ON MERCAPTOPYRUVATE SULFUR-TRANSFERASE (MPST) CONVERSION OF CYANIDE (CN) TO THIOCYANATE.** S I Baskin, H C Patel, E W Nealley and D A Wing. Pharmacology Division, US Army Medical Research Institute of Chemical Defense, Aberdeen Proving Ground, MD.
- #594 **IN VIVO MODIFICATION OF 3'-PHOSPHOADENOSINE 5'-PHOSPHOSULFATE AND SULFATE BY INFUSION OF SODIUM SULFATE, CYSTEINE AND METHIONINE.** J H Cho, H J Kim, C Madhu, and C D Klaassen. University of Kansas Medical Center, Kansas City, KS.
- #595 **DEPLETION OF HEPATIC 3'-PHOSPHOADENOSINE 5'-PHOSPHOSULFATE AND SULFATE IN RATS BY XENOBIOTICS THAT ARE SULFATED.** H J Kim, J H Cho and C D Klaassen. Univ Kansas Med Ctr, Kansas City, KS and National Institute of Safety Research, Seoul, Korea.
- #596 **EFFECT OF A marginally DEFICIENT SULFUR DIET ON ACETAMINOPHEN PHARMACOKINETICS AND SUBSEQUENT SULFATE HOMEOSTASIS IN RATS.** P Rozman, A Gregus, H Kim, C Madhu, Y P Liu and C D Klaassen. University of Kansas Medical Center, Kansas City, KS.

- #597. GLUCURONIDATION OF BENZO(A)PYRENE BY RAT LYMPHOCYTES AND HEPATIC MICROSOMES. *P G Wells* and *Z Hu*. Department of Pharmacology and Faculty of Pharmacy, University of Toronto, Toronto, Ontario, Canada.
- #598. INDUCTIVE EFFECTS OF NITROGEN HETEROCYCLES ON RAT HEPATIC DRUG METABOLIZING ENZYME ACTIVITIES: PHENANTHROLINE RELATED COMPOUNDS REVEAL STRUCTURAL REQUIREMENTS FOR SELECTIVE INDUCTION OF CONJUGATION REACTIONS. *M R Franklin*. Department of Pharmacology and Toxicology, University of Utah, Salt Lake City, UT.
- #599. COMPARISON OF GLUTATHIONE S-TRANSFERASE EXPRESSION IN RAT AND RABBIT TESTICULAR CYTOSOL. *J L York*, *T Primiano*, *J Gandy*, and *R F Novak*. Div. Toxicol., Univ. Ark. Med. Sci., Little Rock, AR and Inst. Chem. Toxicol., Wayne State Univ., Detroit, MI.
- #600. THE ROLE OF GSH IN THE STEREOSELECTIVITY OF GSH S-TRANSFERASE TOWARD THE CONJUGATION OF PYRENE, 4,5-OXIDE. *C J Serabjit-Singh*, *S B Yanni*, *P H Morgan* and *B R Smith*\*. Glaxo, Inc. Research Institute, Research Triangle Park, NC and \*SmithKline Beecham Research and Development, King of Prussia, PA.
- #601. GLUTATHIONE S-TRANSFERASE MEDIATED CONJUGATION OF PYRENE 4,5-OXIDE WITH GLUTATHIONE IN THE ISOLATED PERFUSED RABBIT LUNG MAY BE RATE LIMITED BY TISSUE GSH LEVELS. *B R Smith*\*, *S B Yanni*\*, and *C Serabjit-Singh*\*. \*SmithKline Beecham Research Development, King of Prussia, PA and \*Glaxo Research Labs, Research Triangle Park, NC.

TUESDAY MORNING, FEBRUARY 25  
CONVENTION CENTER—EXHIBIT HALL

### POSTER SESSION: OXIDANTS AND LIPID PEROXIDATION

Chairperson: Nabil M. Elsayed, Letterman Army Institute of Research, Presidio of San Francisco, CA

Displayed: 8:30 a.m.—11:30 a.m.  
Attended: 8:30 a.m.—10:00 a.m.

- #602. A NEW GC-MS PROCEDURE FOR ANALYSIS OF LIPID HYDROPEROXIDES IN BIOLOGICAL SAMPLES. *R J Stephens*, *C A Tyson*, and *D W Thomas*. SRI International, Menlo Park, CA.
- #603. A NEW MODEL SYSTEM FOR STUDYING LIPIDS DURING ISCHEMIA/REPERFUSION. *L L McLeod* and *A Sevanian*. University of Southern Calif., Institute for Toxicology, Los Angeles, CA.
- #604. LIPOXYGENASE HYDROXYLATES PROLINE. *J Z Byczkowski*\*, *P J Ramgoolie* and *A P Kulkarni*. Toxicology Program, College of Public Health, University of South Florida, Tampa, FL. \*present address: ManTech Environmental Technology Inc., Dayton, OH.
- #605. EXCRETION OF ACETALDEHYDE, FORMALDEHYDE, ACETONE, AND MALONDIALDEHYDE IN THE URINE OF RATS FOLLOWING AN ACUTE DOSE OF ETHANOL. *J Moser*, *D Bagchi*, and *S J Stohs*. School of Pharmacy and Allied Health Professions, Creighton University, Omaha, NE.
- #606. EXCRETION OF MALONDIALDEHYDE, FORMALDEHYDE, ACETALDEHYDE AND ACETONE IN THE URINE OF RATS IN RESPONSE TO AN ACUTE DOSE OF MALONDIALDEHYDE. *P I Akubue* and *S J Stohs*. School of Pharmacy and Allied Health Professions, Creighton University, Omaha, NE.
- #607. DIQUAT INDUCED SUPEROXIDE PRODUCTION IN RAINBOW TROUT MICROSOMES. *I R Schultz*<sup>1</sup>, *T Ogata*<sup>3</sup>, *W L Hayton*<sup>1</sup>, and *L J Berliner*<sup>2</sup>. Coll. of Pharmacy<sup>1</sup> and Dept. of Chemistry<sup>2</sup>, The Ohio State Univ., Columbus, OH and Dept. of Materials Science and Engr.<sup>3</sup>, Yamagata Univ., Yamagata, Japan.
- #608. *IN VITRO* ACTIVATION OF LIPOPHILIC TRIBUTYL TINS (TBTs) BY SUPEROXIDE PRODUCES TBT SUPEROXO RADICALS: PROPOSED *IN VIVO* INITIATORS OF LIPID PEROXIDATION—AN EPR STUDY. *J A Rivera* and *S C Cummings*. Naval Medical Research Institute Detachment (Toxicology) and Wright State University, Department of Bioinorganic Chemistry, Dayton, OH. Sponsor: *J McDougal*.
- #609. EFFECTS OF PEROXISOME PROLIFERATION ON LIPID PEROXIDATION INDUCED BY DICHLOROACETATE AND TRICHLOROACETATE. *E W Austin*, *J L Larson*, *R J Bull*. College of Pharmacy, Washington State University, Pullman, WA.
- #610. EPIDERMAL HYDROPEROXIDE LEVELS AND SUPEROXIDE DISMUTASE ACTIVITY IN RESPONSE TO PHORBOL MYRISTATE ACETATE IN DIFFERENT STRAINS OF MICE. *R T Plutnick* and *G Witz*. Joint Graduate Program in Toxicology, Rutgers University/UMDNJ-R. W. Johnson Medical School, Piscataway, NJ.
- #611. CYTOTOXIC OXIDATIVE STRESS IN THIOL DEPLETED CULTURED CARDIOMYOCYTES IS DECREASED BY MITOCHONDRIAL RESPIRATORY CHAIN INHIBITORS. *C M Dhanbhoora* and *J R Babson*. Dept. of Pharmacology and Toxicology, College of Pharmacy, University of Rhode Island, Kingston, RI. Sponsor: *Z A Shaikh*.
- #612. PHOSGENE INHALATION CAUSES INCREASED cAMP AND MALONDIALDEHYDE CONCENTRATION IN ISOLATED BUFFER PERFUSED RABBIT LUNGS. *A M Sciuto*, *P T Strickland*, *T P Kennedy*, and *G H Gurtner*. Johns Hopkins Univ., Baltimore, MD and NY Medical Coll., Valhalla, NY.
- #613. COLCHICINE PREVENTS PHOSGENE-INDUCED AIRWAY HYPERREACTIVITY. *J S Tepper*, *J R Lehmann*, *D W Winsett* and *A J Ghio*<sup>1</sup>. ManTech Environmental, Research Triangle Park, NC; and <sup>1</sup>Duke Univ. School of Medicine, Durham, NC.



- #614 **DIFFERENTIAL SENSITIVITY TO ACUTE OZONE (O<sub>3</sub>): A STUDY OF LUNG DYSFUNCTION AND INFLAMMATION IN THREE RAT STRAINS.** D L Costa, J S Tepper<sup>1</sup>, R Devlin, M Madden<sup>2</sup>, G E Hatch, H Koren, J Boere<sup>3</sup>, and P Rombout<sup>3</sup>. HERL/USEPA; <sup>1</sup>ManTech Inc., Research Triangle Park, NC; <sup>2</sup>UNC, Chapel Hill, NC; and <sup>3</sup>NIVM, Bilthoven, Netherlands.
- #615 **A HUMAN BRONCHIAL EPITHELIAL CELL LINE PRODUCES ALDEHYDES DERIVED FROM ARACHIDONIC ACID (AA) IN RESPONSE TO OZONE (O<sub>3</sub>) EXPOSURE.** M C Madden, K McKinnon, R Devlin, and M Friedman. University of North Carolina, Alliance Technologies, US EPA, Chapel Hill, NC. Sponsor: D J Holbrook, Jr.
- #616 **PLATELET ACTIVATING FACTOR (PAF) CATABOLISM IS ALTERED IN DIFFERENTIATED HL60 CELLS BY OZONE (O<sub>3</sub>).** J M Samet and M Friedman. University of North Carolina at Chapel Hill, Chapel Hill, NC. Sponsor: D J Holbrook, Jr.
- #617 **EFFECTS OF REPEATED OZONE EXPOSURE IN SUSCEPTIBLE AND RESISTANT STRAINS OF MICE.** R Slade, K M Crissman, J Norwood, and G E Hatch. PTB, ETD, HERL, EPA, Research Triangle Park, NC.
- #618 **REACTION OF OZONE WITH LIPOSOMES CONTAINING UNSATURATED PHOSPHOLIPIDS.** J Santrock, R A Gorski, and J F O'Gara. Biomedical Science and Analytical Chemistry Departments, General Motors Research Laboratories, Warren, MI. Sponsor: M J Olson.
- #619 **REACTIONS OF OZONE WITH VITAMIN E.** D C Liebler, S Matsumoto, and M Matsuo. Dept. Pharmacol and Toxicol., Univ. of Arizona, Tucson, AZ and Tokyo Metropolitan Inst. Gerontology, Tokyo, Japan.
- #620 **EFFECTS OF VITAMIN E AND LINOLEIC ACID SUPPLEMENTATION ON LIPID PEROXIDATION AND CYTOTOXICITY IN HUMAN KERATINOCYTES.** H Wey and M Woolery. Cellular Toxicology, ETB, DBBS, NIOSH, CDC, Cincinnati, OH. Sponsor: M Toraason.
- #621 **LIPOSOME-ASSOCIATED VITAMIN E CONFERS PROTECTION AGAINST PARAQUAT-INDUCED LUNG TOXICITY.** Z Sun-tres and P N Shek. Operational Medicine Section, Biosciences Division, Defence and Civil Institute of Environmental Medicine, North York, Ontario, Canada. Sponsor: E M K Lui.
- #622 **INHIBITION OF MICROSOMAL LIPID PEROXIDATION BY GLUTATHIONE (GSH) AND NUCLEOSIDE TRIPHOSPHATES.** J Palamanda and J P Kehrer. Division of Pharmacology and Toxicology, College of Pharmacy, University of Texas at Austin, Austin, TX.

**TUESDAY MORNING, FEBRUARY 25**  
**CONVENTION CENTER—EXHIBIT HALL**

## **POSTER SESSION: IMMUNOTOXICOLOGY II**

**Chairpersons:** Robert L. Sherwood, IIT Research Institute, Chicago, IL and Michael J. Murray, The Procter & Gamble Company, Cincinnati, OH

**Displayed:** 8:30 a.m.—11:30 a.m.  
**Attended:** 8:30 a.m.—10:00 a.m.

- #623 **EFFECT OF NO<sub>2</sub> EXPOSURE ON VIRUS-AUGMENTED NATURAL KILLER (NK) ACTIVITY AND MURINE CYTOMEGALOVIRUS INFECTION (MCMV).** M J K Selgrade, M J Daniels, W A Craig, E Corsini, and G J Rosenthal, Health Effects Research Laboratory, U.S. EPA and \*NIEHS, Research Triangle Park, NC.
- #624 **EFFECTS OF CYCLOPHOSPHAMIDE TREATMENT ON SUSCEPTIBILITY TO RAT CYTOMEGALOVIRUS (RCMV) AND RCMV AUGMENTED NATURAL KILLER (NK) CELL ACTIVITY.** M J Daniels and M J K Selgrade. Health Effects Research Lab., U.S. EPA, Research Triangle Pk., NC.
- #625 **PARASITE FECUNDITY AS A MEASURE OF HOST RESISTANCE.** R W Luebke, C B Copeland, M M Riddle, W Williams, and R J Smialowicz, US EPA, RTP, NC and D L Andrews, ManTech, Inc. RTP, NC.
- #626 **DIFFERENTIAL EFFECTS ON HOST RESISTANCE OF LIPOSOME-ENCAPSULATED HEMOGLOBIN (LEH) BLOOD SUBSTITUTES MADE WITH CONVENTIONAL OR STEALTH LIPIDS.** R L Sherwood<sup>1</sup>, D L McCormick<sup>1</sup>, S Zheng<sup>2</sup>, and R L Beissinger<sup>2</sup>. <sup>1</sup>IIT Research Institute and <sup>2</sup>IL Institute of Technology, Chicago, IL.
- #627 **IMMUNOLOGICAL CHANGES IN AZIDOTHYMININE-TREATED MICE.** J Descotes, Y S Li, R Tedone, C Gimond, J P Revillard. Laboratory of Immunotoxicology, INSERM U80, Lyon, France.
- #628 **EVIDENCE OF DOXORUBICIN (DOX) EFFLUX FROM A BONE MARROW STROMAL CELL LINE.** K S Cocke, L W Updyke, and D Wierda. Toxicology Research Laboratories, Lilly Research Laboratories, A Division of Eli Lilly and Company, Greenfield, IN.
- #629 **IMMUNOTOXICOLOGICAL ALTERATIONS INDUCED BY N-TRIMETHOXYBENZOYL-5'-DEOXY-5-FLUORO-CYTIDINE (NEOFURTULON) AND 5'-DEOXY-5-FLUOROURIDINE (FURTULON) IN BDF1 MICE.** T Inoue, Nippon Roche Research Center, Kamakura, Japan, and T D Anderson, C Meschter, and T J Hayes, Hoffmann-La Roche, Inc., Nutley, NJ.
- #630 **EFFECT OF AZATHIOPRINE ON IMMUNE FUNCTION IN INBRED WISTAR KYOTO RATS.** M Lovik, E C Groeng, H J Dahlman, B Hasseltvedt, P Lausund, and R Andersen. Departments of Immunology and Environmental Medicine, National Institute of Public Health, Oslo, Norway. Sponsor: E Dybing.

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- #631 **INHIBITION OF MOUSE AND HUMAN LYMPHOCYTE PROLIFERATIVE RESPONSES BY  $\Delta^9$ -THC AND THE CANNABINOID ANALOG, CP-55,940.** *N E Kaminski, S C Wood, F K Kessler, and A R Schatz.* Department of Pharmacology and Toxicology, Medical College of Virginia/VCU, Richmond, VA.
- #632 **SPECIES AND STRAIN COMPARISONS OF IMMUNOSUPPRESSION BY 2-METHOXYETHANOL (ME) AND 2-METHOXY-ACETIC ACID (MAA).** *M Riddle, W Williams, D Andrews\*, C Copeland, R Luebke, R Smialowicz.* U.S. EPA and \*ManTech Inc., Research Triangle Park, NC.
- #633 **THE IMMUNOTOXICITY OF SUCCINYLATED CONCAVALIN A (SCA).** *G M Shopp, D A Clark, K A Galbreth, P M Gillespie and G J Rosenthal.* Lovelace Medical Foundation and the VA Medical Center, Albuquerque, NM; and NIEHS, Research Triangle Park, NC.
- #634 **IMMUNE FUNCTION STUDIES IN RATS FED THE COLOR ADDITIVE AMMONIA CARAMEL COLOR.** *G F Houben, A H Penninks, W Seinen, J G Vos, and H Van Loveren.* Research Institute of Toxicology, University of Utrecht; TNO-Toxicology and Nutrition Institute, Zeist; National Institute of Public Health and Environmental Protection, Bilthoven, The Netherlands.
- #635 **EFFECTS OF BENZO(A)PYRENE ON HUMAN PERIPHERAL BLOOD MONONUCLEAR CELL *IN VITRO*.** *S P Mudzinski.* Depts. of Pathology/Laboratory Medicine and Microbiology/Immunology, Albany Medical College, Albany, NY. Sponsor: *M Aschner.*
- #636 **LEVELS OF 2,3,7,8-TETRACHLORODIBENZO-p-DIOXIN (TCDD) IN SPLENIC TISSUE OF C57B1/6 MICE ASSOCIATED WITH AN IMMUNOSUPPRESSIVE DOSE OF TCDD.** *N I Kerkvliet, L B Steppan and C M Neumann.* College of Veterinary Medicine, Oregon State University, Corvallis, OR.
- #637 **EVALUATION OF ACUTE IMMUNOTOXICITY OF ALACHLOR IN MALE F344/N RATS.** *G M Henningsen, R E Biagini, B A MacKenzie, W T Sanderson, S K Robertson and E S Baumgardner.* NIOSH, DBBS/ABB and DSHEFS/TWSB, Cincinnati, OH.
- #638 **ENHANCED SUPPRESSION OF HUMORAL IMMUNITY WITHOUT A CONCOMITANT INCREASE IN ENZYME INDUCTION IN DBA/2 MICE FOLLOWING SUBCHRONIC EXPOSURE TO 2,3,7,8-TCDD.** *\*M P Holsapple, \*H G Jeong, \*S C Wood, \*R A Matulka, \*S D Jordan, \*D L Morris. \*MCV/VCU, Richmond, VA and \*\*KAIST, Seoul, Korea.*
- #639 **IMMUNOLOGICAL CONSEQUENCES OF ISOTHIAZOLONES BINDING TO PROTEIN.** *D W Potter and K S Wederbrand.* Rohm and Haas Co., Spring House, PA. Sponsor: *M E Kyle.*
- #640 **IMMUNOGENICITY OF ACTIVASE® (ALTEPLASE, RECOMBINANT) IN CHIMPANZEES.** *R C Couch and A Javadian.* White Sands Research Center, Alamogordo, NM.
- #641 **IMMEDIATE HYPERSENSITIVITY INDUCED BY TETRACOSACTIDE, CHYMOPAPAIN AND *CANDIDA ALBICANS* LYSATE IN GUINEA-PIGS.** *F Verdier, V Maiello, J Descotes\*.* Hazleton France, L'Arbresle and \*Laboratory of Immunotoxicology, INSERM, Lyon, France.
- #642 **REACTIVITY OF PLASMA FROM METHYL DOPA TREATED MICE TO LIVER PROTEINS.** *A K Hubbard and A J Gandolfi.* School of Pharmacy, Univ. of Connecticut, Storrs, CT and Dept. of Anesthesiology, Univ. of Arizona, Tucson, AZ.

**TUESDAY MORNING, FEBRUARY 25  
CONVENTION CENTER—EXHIBIT HALL**

## **POSTER SESSION: MOLECULAR AND CELLULAR TOXICOLOGY**

Chairperson: Arthur Levin, Hoffmann-La Roche, Nutley, NJ

Displayed: 8:30 a.m.—11:30 a.m.  
Attended: 8:30 a.m.—10:00 a.m.

- #643 **BENZO(A)PYRENE-INDUCED INHIBITION OF DNA SYNTHESIS IN CULTURED AVIAN AORTIC SMOOTH MUSCLE CELLS.** *X Ou and K Ramos.* Dept. of Vet. Physiol. Pharmacol., Texas A&M University, College Station, TX.
- #644 **MODULATION OF HISTONE PHOSPHORYLATION *IN VITRO* BY 2,3,7,8 TETRACHLORODIBENZO-p-DIOXIN (TCDD) IN CULTURED RAT AORTIC SMOOTH MUSCLE CELLS (SMCs).** *T J Weber, S H Safe and K S Ramos.* Dept. of Vet. Physiol. Pharmacol., Texas A&M University, College Station, TX.
- #645 **ENHANCED INOSITOLPHOSPHATE METABOLISM IN RAT AORTIC SMOOTH MUSCLE CELLS (SMCs) BY BENZO(A)PYRENE (BaP).** *K S Ramos, C H Thurlow and R S Chapkin.* Dept. of Vet. Physiol. Pharmacol., Texas A&M University, College Station, TX.
- #646 **SUBCELLULAR LOCALIZATION OF LY281389 IN ACIDIC VESICLES AND EFFECTS ON ORGANELLE DENSITY PROFILES.** *D D Giera and C B Jensen.* Lilly Research Laboratories, A Division of Eli Lilly and Co., Greenfield, IN. Sponsor: *P I Echo.*
- #647 **MECHANISMS OF BUTYLATED HYDROXYTOLUENE HYDROPEROXIDE-STIMULATED TOXICITY AND CHANGES IN GENE EXPRESSION IN MOUSE EPIDERMAL CELL LINE PE.** *K Z Guyton, L J Prestigiacomo, N E Davidson, and T W Kensler.* Division of Toxicological Sciences, Johns Hopkins School of Hygiene Public Health, Baltimore, MD.
- #648 **13-*cis* RETINOIC ACID DOES NOT BIND TO THE RETINOIC ACID RECEPTORS ALPHA, BETA AND GAMMA.** *A A Levin, T Bosakowski, S Kazmer, J F Grippo.* Dept. of Toxicology and Pathology, Hoffmann-La Roche Inc., Nutley, NJ.

- #649 **EXOGENOUS ALL-TRANS RETINOIC ACID (RA) ALTERS THE TEMPORAL AND SPATIAL PATTERN OF HOX 1.6 GENE EXPRESSION IN EARLY MOUSE DEVELOPMENT: A POSSIBLE MECHANISM FOR RA-INDUCED TERATOGENESIS.** H J Kim, D A Lucas and J F Grippo. Dept. Toxicology and Pathology, Hoffmann-La Roche, Nutley, NJ. Sponsor: A A Levin.
- #650 **RETINOIC ACID RECEPTORS  $\alpha$ ,  $\beta$  AND  $\gamma$  mRNAs ARE DIFFERENTIALLY REGULATED IN THE DEVELOPING HAMSTER FETUS.** M W Collard, Y-W Kim, J I Huggenvik, C C Willhite and R P Sharma. Toxicology Program, Utah State University, Logan, UT.
- #651 **PRODUCTION OF MOUSE RETINOIC ACID RECEPTOR GAMMA IN *E. COLI* AND ITS CHARACTERIZATION.** Y-W Kim, and R P Sharma. Center for Environmental Toxicology, Utah State University, Logan, UT.
- #652 **EFFECT OF STAUROSPORIN (STAU) ON ACTIVATION OF PROTEIN KINASE C (PKC) BY 12-O-TETRADECANOYLPHORBOL-13-ACETATE (TPA) IN A549 HUMAN LUNG CARCINOMA CELLS.** A Gescher and T D Bradshaw. Cancer Research Campaign Experimental Chemotherapy Group, Pharmaceutical Sciences Institute, Aston University, Birmingham, UK. Sponsor: S D Nelson.
- #653 **ACTIVATION OF THE GROWTH ARREST AND DNA DAMAGE INDUCIBLE GENE *gadd153* BY NEPHROTOXIC CYSTEINE CONJUGATES AND DITHIOTHREITOL (DTT).** Q Chen<sup>1</sup>, K F Yu<sup>1</sup>, N J Holbrook<sup>2</sup>, M M Halleck<sup>3</sup> and J L Stevens<sup>3</sup>. <sup>1</sup>University of California, Berkeley, CA; <sup>2</sup>National Institute on Aging, Baltimore, MD and <sup>3</sup>W. Alton Jones Cell Science Center, Lake Placid, NY.
- #654 **EFFECTS OF STEROIDS ON T-2 CHO CELL ASSOCIATION.** J L Middlebrook and D L Leatherman. Pathophysiology Division, U.S. Army Medical Research Institute for Infectious Diseases, Frederick, MD. Sponsor: R W Wannemacher.
- #655 **CHEMICAL MODIFICATION AND SITE-DIRECTED MUTAGENESIS OF INSECT JUVENILE HORMONE ESTERASE.** T Shiotsuki, T L Huang, V K Ward, B C Bonning, T Uematsu and B D Hammock. Depts of Entomology and Environmental Toxicology, Univ. of California, Davis, CA.
- #656 **REGULATION OF CATALASE GENE EXPRESSION BY COPPER.** P J Lapinskas and V Culotta. Toxicological Sciences, EHS, The Johns Hopkins University, School of Hygiene and Public Health, Baltimore, MD. Sponsor: J Yager.
- #657 **NON-GENOTOXIC INTERACTIONS OF XENOBIOTICS WITH PRIMARY HUMAN EPIDERMAL CELLS *IN VITRO*: DOWN-REGULATION OF GAP JUNCTIONAL COMMUNICATION.** E Dupont, B V Madhukar, H L Rupp, and J E Trosko. Department of Pediatrics/Human Development, Michigan State University, East Lansing, MI.
- #658 **THE ISOLATION AND CHARACTERIZATION OF A NOVEL MOUSE HOMEOBOX GENE, HOX 1.11.** D A Lucas<sup>1</sup>, H J Kim<sup>1</sup>, M T Gendron-Maguire<sup>2</sup>, A Baron<sup>3</sup>, T Gridley<sup>2</sup>, and J F Grippo<sup>1</sup>. Dept. of Toxicology Pathology<sup>1</sup>, Dept. of Cell Developmental Biology<sup>2</sup>, RIMB, Hoffmann-La Roche, Inc., Nutley, NJ, Institute for Immunology<sup>3</sup>, Hoffmann-La Roche, Inc., Basel, Switzerland. Sponsor: A A Levin.
- #659 **EFFECTS OF CALCIUM ON TGF $\beta$ 1 AND GROWTH RELATED GENES IN Ad12-SV40 TRANSFORMED HUMAN TRACHEAL GLAND CELLS.** A P Joiakim, D P Chopra, P A Mathieu. Institute of Chemical Toxicology, Wayne State University, Detroit, MI. Sponsor: R F Novak
- #660 **DNA TOPOISOMERASE II INHIBITORS INDUCE A LOSS OF MITOCHONDRIAL DNA IN MAMMALIAN CELLS.** J W Lawrence and T C Rowe. Department of Pharmacology and Therapeutics, University of Florida, Gainesville, FL. Sponsor: R D Harbison.
- #661 **P-AZIDOBENZYLPHLORIZIN INDUCES CHANGES IN ERYTHROCYTE RHEOLOGY AND MORPHOLOGY.** D M Hoefner, B M Davis, and D F Diedrich. University of Kentucky, Graduate Center for Toxicology/Dept. of Anatomy and Neurobiology/Dept. of Pharmacology, Lexington, KY. Sponsor: L W Robertson.
- #662 **INHIBITION OF INSULIN SYNTHESIS IN CLONAL RAT INSULINOMA CELLS BY CYPROHEPTADINE-LIKE COMPOUNDS.** C P Miller, T J Reape and L J Fischer. Institute for Environmental Toxicology and Dept. of Pharmacology/Toxicology, Michigan State University, East Lansing, MI.
- #663 **CHARACTERIZATION OF CYTOPATHOLOGY AND DNA CROSS-LINKING BY PYRROLIZIDINE ALKALOIDS.** H Y Kim<sup>1</sup>, F R Stermitz<sup>2</sup>, and R A Coulombe, Jr.<sup>1</sup>. <sup>1</sup>Toxicology Program, Utah State University, Logan, UT and <sup>2</sup>Department of Chemistry, Colorado State University, Fort Collins, CO.
- #664 **HALOALKENE CYSTEINE CONJUGATES INDUCE A PERMEABILITY TRANSITION OF THE INNER MEMBRANE IN ISOLATED RAT KIDNEY MITOCHONDRIA.** P C Brown, P M Sokolove and T W Jones. University of Maryland Toxicology Program and Department of Pathology, University of Maryland School of Medicine, Baltimore, MD.
- #665 **MODULATION OF SEROTONIN-INDUCED CURRENTS BY POLYVALENT CATIONS IN NEUROBLASTOMA CELLS.** M Uki and T Narahashi. Dept. of Pharmacology, Northwestern University Medical School, Chicago, IL.
- #666 **GENOMIC STRUCTURE OF KERATINOCYTE TRANS-GLUTAMINASE.** B E Stewart, M A Phillips, and R H Rice. Environmental Toxicology Department, University of California, Davis, CA.
- #667 **REGULATION OF EXPRESSION FOR A 3-METHYL-CHOLANTHRENE-INDUCIBLE CYTOCHROME P450 mRNA IN CHICK EMBRYO LIVER.** J W Hamilton and N S Baptiste. Department of Pharmacology & Toxicology, Dartmouth Medical School, Hanover, NH.

**TUESDAY, FEBRUARY 25**

**12:00 Noon-1:00 p.m.**

**CONVENTION CENTER—BALLROOM 6C**

## **SELECTIVE TOXICITY IN THE SERVICE OF MAN**

**1992 Burroughs Wellcome Toxicology Scholar Award Lecture**

**by Bruce D. Hammock, Department of Entomology & Environmental Toxicology, UC Davis, Davis, CA**

**Chaired by Meryl H. Karol, Ph.D.**

Our profession dictates that we raise issues of toxicity in a timely manner to protect human and environmental health. In this way we save immense resources, but as bearers of bad news, the practice wins us few friends. However, Adrian Albert pointed out that selective toxicity is the basis of modern medicine and agriculture, and it must be the basis for the integration of biotechnology into these fields. Scientists in the Pesticide Biotechnology Laboratory at Davis work in several areas, including immunochemical detection of environmental chemicals, effects of peroxisome proliferation, and the metabolism of xenobiotics in mammals. However, in the spirit of Adrian Albert, I will discuss hydrolytic enzymes, not only as catalysts which degrade toxic materials, but as proteins which themselves can be used as selective toxins by genetic engineering. The principles which we have developed to study the toxicology of small molecules now must be expanded to include products of research in biotechnology.

**TUESDAY AFTERNOON, FEBRUARY 25**

**1:30 p.m.—4:30 p.m.**

**CONVENTION CENTER—BALLROOM 6A**

## **SYMPOSIUM: CHEMICAL ALLERGY: MOLECULAR MECHANISMS AND PRACTICAL APPLICATIONS**

Sponsored by the Immunotoxicology Specialty Section

**Chairperson:** Ian Kimber, ICI Central Toxicology Laboratory, Cheshire, UK

The objective of this symposium is to explore recent advances in our understanding of the mechanisms through which chemicals stimulate immune function and induce allergic disease. The speakers will, in addition, discuss the ways in which such advances can be applied to address the toxicological and occupational health problems posed by chemical allergy. The first presentation will explore recent work directed towards investigation of the nature and regulation of immune responses to chemical allergens and the cellular and molecular mechanisms whereby exposure to chemicals may result in respiratory and/or contact hypersensitivity. Processing and presentation of chemicals may result in respiratory and/or contact hypersensitivity. Processing and presentation of chemical allergens will be addressed in the second presentation. In particular, the role of Langerhans cells and dendritic cells in the initiation of immune responses to contact allergens will be discussed. The third presentation will focus on the role of early T lymphocyte responses during elicitation reactions to contact allergens in the skin and respiratory tract. Evidence suggesting that such T lymphocyte responses cause vasodilation and allow the entry of effector cells to challenge sites will be discussed. In the final presentation, the role cytokines play in initiation, maintenance and regulation of responses to chemical allergens will be examined.

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| #668 | 1:30 | <b>CHEMICAL ALLERGY: MOLECULAR MECHANISMS AND PRACTICAL APPLICATIONS: INTRODUCTION.</b> I Kimber. ICI Central Toxicology Laboratory, Macclesfield, Cheshire, UK.   |
| #669 | 1:50 | <b>THE INDUCTION AND REGULATION OF IMMUNE RESPONSES TO CHEMICAL ALLERGENS.</b> I Kimber. ICI Central Toxicology Laboratory, Macclesfield, Cheshire, UK.  |
| #670 | 2:25 | <b>PROCESSING AND PRESENTATION OF CHEMICAL ALLERGENS.</b> G F Gerberick. Procter & Gamble, Miami Valley Laboratories, Cincinnati, OH.  |
| #671 | 3:00 | <b>A ROLE FOR CELLULAR IMMUNITY IN THE INDUCTION OF AIRWAY HYPERREACTIVITY BY SMALL MOLECULAR WEIGHT COMPOUNDS.</b> H Van Loveren, J Garssen, and F P Nijkamp. National Institute of Public Health and Environmental Protection, Bilthoven, and Utrecht University, The Netherlands. |
| #672 | 3:35 | <b>CYTOKINES IN THE RESPONSE TO CHEMICAL ALLERGENS.</b> R V House. IIT Research Institute, Chicago, IL.  |

**TUESDAY AFTERNOON, FEBRUARY 25**

**1:30 p.m.—4:30 p.m.**

**CONVENTION CENTER—BALLROOM 6C**

## **SYMPOSIUM: PEROXIDASES AND PEROXYL RADICALS IN TOXICITY**

**Chairpersons:** Lawrence Marnett, Vanderbilt University, Nashville, TN and Bill J. Smith, The Procter & Gamble Co., Cincinnati, OH.

The purpose of this symposium is to review the latest concepts in the chemistry and biology of xenobiotic oxidation by peroxidases and peroxyl free radicals. It will begin with an update of the chemistry of oxidation by peroxidases and peroxyl radicals. Recent experiments on the mechanism of activation of aromatic amines to mutagens by the peroxidase of prostaglandin endoperoxide synthase and horseradish peroxidase will be presented. The identity of the oxidizing agents responsible for aromatic amine oxidation by prostaglandin endoperoxide synthase and other peroxidases will be

discussed. Recent experiments demonstrating the generation of peroxy/free radicals in mouse skin following administration of phorbol ester tumor promoters will be described. The oxidation of xenobiotics by myeloperoxidase and its involvement in adverse drug reactions will also be described. This symposium will highlight the most recent findings in the chemistry of peroxidase oxidation and demonstrate its importance in experimental animal models and human disease.

- #673 1:30 **PEROXIDASES AND PEROXYL RADICALS IN TOXICITY: INTRODUCTION.** *L J Marnett.* Department of Biochemistry, Vanderbilt University School of Medicine, Nashville, TN.
- #674 1:35 **PEROXIDATION OF XENOBIOTICS BY PROSTAGLANDIN H SYNTHASE.** *G A Reed.* University of Kansas Medical Center, Kansas City, KS.
- #675 2:20 **OXIDATION OF AROMATIC AMINES TO MUTAGENS CATALYZED BY PROSTAGLANDIN H SYNTHASE.** *T E Eling, P D Josephy and B J Smith.* Lab. Molecular Biophysics, Nat. Institute of Environ. Hlth. Sci., Research Triangle Park, NC.
- #676 3:05 **PEROXIDASES AND PEROXYL RADICALS IN THE OXIDATION OF AROMATIC AMINES AND POLYCYCLIC HYDROCARBON DIHYDRODIOLS.** *L J Marnett, G R Reddy, and C Ji.* A B Hancock, Jr. Memorial Laboratory for Cancer Research, Dept. of Biochemistry, Center in Molecular Toxicology, Vanderbilt University School of Medicine, Nashville, TN.
- #677 3:50 **METABOLISM OF DRUGS BY MYELOPEROXIDASE.** *J P Uetrecht.* University of Toronto, Toronto, Canada.

## **TUESDAY AFTERNOON, FEBRUARY 25**

**1:30 p.m.—4:00 p.m.**

**CONVENTION CENTER—ROOM 607**

### **PLATFORM SESSION: RISK ASSESSMENT II**

**Chairpersons:** Bruce J. Kelman, Failure Analysis Associates, Menlo Park, CA and Wendy H. Koch, TRC Environmental Consultants, E. Hartford, CT

- #678 1:30 **EFFECTS OF UNCERTAINTY ON REASONABLE-CASE RISK ASSESSMENTS.** *R M Putzrath,* Organization Resources Counselors, Washington, DC and *M E Ginevan,* Silver Spring, MD.
- #679 1:45 **THE TOXICOLOGICAL BASIS OF ABSORPTION FACTORS.** *J S Tsuji and G A Pascoe.* Environmental Toxicology International, Inc., Seattle, WA.
- #680 2:00 **RISK ASSESSMENT OPTIONS FOR POLYCYCLIC AROMATIC HYDROCARBONS.** *R Schoeny.* US EPA, Environmental Criteria and Assessment Office, Cincinnati, OH. *R McGaughy and C Chen,* US EPA, Washington, DC. Sponsor: *M Dourson.*
- #681 2:15 **ACUTE TOXICITY INDICATOR FOR CHEMICAL SUBSTANCES.** *V Molak.* Biotechnology Forum, Cincinnati, OH. Sponsor: *E J Calabrese.*
- #682 2:30 **TOXICITY ASSESSMENT OF THE CHEMICAL MIXTURES: JP-5, CRUDE OIL, MINERAL SPIRITS AND DIESEL FUEL.** *S R Custance, M J Sullivan, P A McCaw, M C McGinn.* Envirologic Data, Ventura, CA.
- #683 2:45 **A TOXICOLOGICAL EVALUATION OF SUBSTITUTED FURANS USING STRUCTURE-ACTIVITY RELATIONSHIPS.** *M J Sullivan, J T Stanford, S R Custance.* Envirologic Data, Ventura, CA.
- #684 3:00 **A GENERIC PBPK MODELING TOOL FOR RAPIDLY DEVELOPING PBPK MODELS.** *L A Cox, Jr. and F B Thomas.* Cox Associates, Denver, CO; and *ENSR Consulting and Engineering,* Houston, TX.
- #685 3:15 **PHYSIOLOGICALLY-BASED MODELLING OF THE PHARMACOKINETICS AND ENZYME INDUCING PROPERTIES OF 2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN (TCDD).** *J Mills, J Murphy, M Gargas and M Andersen,* Chemical Industry Institute of Toxicology, RTP, NC.
- #686 3:30 **DEVELOPMENT OF RISK-BASED RE-ENTRY LEVELS FOR PCBS, PCDDS, AND PCDFS FOLLOWING PCB FIRES.** *J Michaud, D Paustenbach.* ChemRisk®—A Division of McLaren/Hart, Portland, ME.
- #687 3:45 **RISK ASSESSMENT AND MANAGEMENT DUE TO CONSUMPTION OF FISHERY PRODUCTS CONTAMINATED WITH CHEMICALS.** *F E Ahmed.* Institute of Medicine, National Academy of Sciences, Washington DC.

## **TUESDAY AFTERNOON, FEBRUARY 25**

**1:30 p.m.—4:00 p.m.**

**CONVENTION CENTER—ROOM 608**

### **PLATFORM SESSION: BIOLOGICAL MARKERS**

**Chairperson:** Rogene F. Henderson, Inhalation Toxicology Research Institute, Albuquerque, MN

- #688 1:30 **A NEW BIOMARKER FOR DETECTING THE EFFECTS OF ENVIRONMENTAL CADMIUM EXPOSURE: THE FISH IMMUNE RESPONSE.** *N Enane, D Bowser, K Frenkel, K S Squibb, J T Zelikoff.* NYU Medical Center, Inst. of Environ. Medicine, New York, NY.
- #689 1:45 **DEVELOPMENT OF A DIAGNOSTIC TEST FOR FUMONISIN TOXICOSES.** *W P Norred, E Wang, H S Yoo, J Showker, K Voss, T Wilson, F Ross, W Haschek, V Beasley, A H Merrill, and R T Reiley.* USDA-ARS, Athens, GA; Emory University, Atlanta, GA; USDA-APHIS, Ames, IA; University of Illinois, Urbana, IL.

- #690 2:00 **PARTIAL CHARACTERIZATION OF PROTEOLYTICALLY-DERIVED PEPTIDES FROM ACRYLAMIDE ADDUCTED HEMOGLOBIN.** *D L Springer, C G Edmonds, D M Sylvester, C Sander and R J Bull.* Battelle, Pacific Northwest Laboratory, Richland, WA and Washington State University, Pullman, WA.
- #691 2:15 **CIRCULATING LEUKOCYTES AS INDICATORS OF ARYLAMINE CARCINOGEN EXPOSURE.** *G N Levy.* Dept. of Pharmacology, University of Michigan, Ann Arbor, MI.
- #692 2:30 **BLOOD PROTEINS ADDUCTS FORMATION IN RABBITS SUBCHRONICALLY EXPOSED TO BENZO(a)PYRENE (BaP).** *C Viau and G Carrier.* Dept. Med., Université de Montreal, Canada.
- #693 2:45 **RECOGNITION OF ACRYLAMIDE ADDUCTS IN PEPTIDES FROM HEMOGLOBIN.** *C Sander, D M Sylvester, D L Springer.* Washington State University, Pullman, WA and Battelle, Pacific Northwest Laboratory.
- #694 3:00 **ENZYME-LINKED IMMUNOSORBENT ASSAY FOR THE DETECTION OF THE MERCAPTURIC ACID CONJUGATES OF NAPHTHALENE.** *M-P Marco, M Nasiri, M J Kurth and B D Hammock.* Entomology Department, University of California, Davis, CA.
- #695 3:15 **QUANTITATION OF ACROLEIN AND CROTONALDEHYDE MODIFIED ALBUMIN.** *J C Gan, A Oandasan, G A S Ansari.* Dept. of Human Biology, Chemistry and Genetics, Univ. of Texas Medical Branch, Galveston, TX.
- #696 3:30 **A MODEL OF ACCUMULATION AND REMOVAL OF HEMOGLOBIN ADDUCTS.** *T R Fennell, V E Walker, and S C J Sumner.* CIIT, RTP, NC.
- #697 3:45 **COVALENT CROSS-LINKING OF ERYTHROCYTE SPECTRIN AS A POTENTIAL BIOMARKER FOR CS2 EXPOSURE.** *W M Valentine, D C Anthony, and D G Graham.* Duke University Medical Center, Durham, NC.

**TUESDAY AFTERNOON, FEBRUARY 25  
CONVENTION CENTER—ROOM 605**

### **POSTER DISCUSSION SESSION: CYTOSKELETON**

**Chairpersons:** Kim Boekelheide, Brown University, Providence, RI and Kenneth Reuhl, Rutgers University, Piscataway, NJ

**Displayed:** 1:30 p.m.—4:30 p.m.

**Discussion:** 2:30 p.m.—4:30 p.m.

- #698 **A QUANTITATION OF FAST AXONAL TRANSPORT IN CULTURED CHICK DORSAL ROOT GANGLION (DRC) EXPLANTS FOLLOWING EXPOSURE TO ACRYLAMIDE (ACR), METHACRYLAMIDE (M-ACR) AND CYANIDE.** *C H Martenson, D C Anthony, M P Sheetz, and D G Graham.* Duke University Medical Center, Durham, NC.
- #699 **ACRYLAMIDE AND 2,5-HEXANEDIONE EFFECTS ON AXONAL MICROTUBULE DENSITY DURING PERIODS OF FAST TRANSPORT DEFICIENCIES.** *D W Sickles.* Department of Cellular Biology and Anatomy, Medical College of Georgia, Augusta, GA.
- #700 **ANOMALOUS PHOSPHORYLATED NEUROFILAMENT ACCUMULATION IN CENTRAL AND PERIPHERAL AXONS OF HENS TREATED WITH TRI-*o*-CRESYL PHOSPHATE (TOCP).** *K F Jensen, N Haykal-Coates.* U.S. Environmental Protection Agency, RTP, NC, *D M Lapadula and M B Abou-Donia,* Duke University Medical Center, Durham, NC.
- #701 **SELECTIVE PYRROLE ADDUCTION OF NEUROFILAMENT PROTEIN LYSINES BY 2,5-HEXANEDIONE *IN VITRO*.** *A P DeCaprio and J H Fowke.* Wadsworth Center for Laboratories and Research, NY State Dept. of Health, Albany, NY.
- #702 **CHARACTERIZATION OF DIFFERENTIATION-SPECIFIC AND CYTOSKELETAL MARKERS IN MICROMASS CULTURES.** *J T Wroble, S G Whittaker, and E M Faustman.* Departments of Pathology and Environmental Health, University of Washington, Seattle, WA.
- #703 **CIS-DIAMMINEDICHLOROPLATINUM (II) (CISPLATIN) ALTERS MICROTUBULE ASSEMBLY DYNAMICS.** *K Boekelheide, M E Arcila and J Eveleth.* Brown Univ., Providence, RI.
- #704 **A SCANNING ELECTRON MICROSCOPIC STUDY OF THE EFFECTS OF DIETHYLDITHIOCARBAMATE (DDC) ON ASTROCYTIC CYTOSKELETON.** *M F McManus and L D Trombetta.* St. John's University College of Pharmacy and Allied Health Professions, NY, NY.
- #705 **A DECREASE IN AXONAL HIGH MOLECULAR WEIGHT NEUROFILAMENT (NFH) PROTEIN IS A SECONDARY RESPONSE TO 2,5-HEXANEDIONE INTOXICATION.** *S V Pyle, V Amarnath, D Graham, D C Anthony.* Duke University Medical Center, Durham, NC.
- #706 **MAPS IMMUNOREACTIVITY IN RAT STRIATUM IS DECREASED BY ACRYLAMIDE.** *N B Chauhan, M I Sabri, and P S Spencer.* Center for Research on Occupational and Environmental Toxicology, Oregon Health Sciences University, Portland, OR.
- #707 **PHENOXY-ACETIC ACID HERBICIDE-MEDIATED CHANGES IN CYTOSKELETAL PROTEINS OF 3T3 CELLS.** *C D Andry, B Anand, S Thorgeirsdottir, W Li, and I N Chou.* Depts. of Pathology and Microbiology, Boston Univ. School of Medicine, Boston, MA.

#708

CYTOSKELETAL INJURY INDUCED BY HEXAVALENT CHROMATE ( $\text{Cr}^{6+}$ ). W Li, and I N Chou. Depts. Microbiology and Pathology, Boston University School of Medicine, Boston, MA.

TUESDAY AFTERNOON, FEBRUARY 25  
CONVENTION CENTER—ROOM 609

## POSTER DISCUSSION SESSION: TCDD: RECENT STUDIES

Chairpersons: Thomas A. Gasiewicz, University of Rochester, Rochester, NY and Alan P. Poland, McArdle Laboratory For Cancer Research

Displayed: 1:30 p.m.—4:30 p.m.

Discussion: 2:30 p.m.—4:30 p.m.

#709

CLONING OF THE AH-RECEPTOR CDNA. K M Burbach, A Poland, and C A Bradfield. Dept. of Pharmacology, Northwestern University, Chicago, IL and McArdle Laboratory for Cancer Research, Madison, WI.

#710

STUDIES ON THE STRUCTURE-FUNCTION OF THE AH RECEPTOR IN MOUSE HEPATOMA CELL LINE (HEPA-1): RECEPTOR SUBUNITS AND STATE OF PHOSPHORYLATION. S E Eltom, and A P Poland. McArdle Laboratory for Cancer Research, University of Wisconsin, Madison, WI.

#711

THE EFFECT OF METAL CHELATION ON Ah RECEPTOR TRANSFORMATION. M J Mahon and T A Gasiewicz. Dept. of Biophysics, University of Rochester School of Medicine and Dentistry, Rochester, NY.

#712

ACTIVATION OF DIOXIN-INDUCIBLE GENES IN AN UNTREATED MOUSE CELL LINE HAVING A 1.2-c M DELETION ON CHROMOSOME 7: EVIDENCE FOR ARACHIDONIC ACID PATHWAY INVOLVEMENT. M Yu, D W Nebert and G A Jamieson, Jr. Dept. Envir. Health, Univ. Cincinnati Med. Center, Cincinnati, OH.

#713

COMPARISON OF THE Ah RECEPTOR FOR 2,3,7,8-TETRACHLORODIBENZO-p-DIOXIN (TCDD) FROM EMBRYONIC VS ADULT LIVER OF "RESPONSIVE" AND "NONRESPONSIVE" MICE. Y Huang, P A Harper and A B Okey. Department of Pharmacology, University of Toronto, Toronto, Ontario, Canada. Sponsor: P G Wells.

#714

ISOMERS OF PHENANTHROLINE AS POSSIBLE 2,3,7,8-TETRACHLORODIBENZO-p-DIOXIN ANTAGONISTS. T A Gasiewicz and M J Mahon. Dept. of Biophysics, Univ. of Rochester School of Medicine and Dentistry, Rochester, NY.

#715

IDENTIFICATION OF 2,3,7,8-TETRACHLORODIBENZO-p-DIOXIN-RESPONSIVE ELEMENTS IN THE ALDEHYDE DEHYDROGENASE GENE. K Takimoto and H C Pitot, McArdle Laboratory for Cancer Research, University of Wisconsin, Madison, WI.

#716

DIOXIN: DISTRIBUTION OF Ah RECEPTOR BINDING IN NEURONS AND GLIA FROM RAT AND HUMAN BRAIN. E K Silbergeld. Program in Toxicology, Univ. of Maryland, Baltimore, MD.

#717

INTERACTION OF TRANSFORMED GUINEA PIG HEPATIC TCDD:Ah RECEPTOR WITH A DIOXIN RESPONSIVE TRANSCRIPTIONAL ENHANCER. P A Bank, E F Yao, and M S Denison. Dept. of Biochemistry, Michigan State University, E. Lansing, MI.

#718

DECOUPLING OF PHOSPHOENOLPYRUVATE CARBOXYKINASE GENE EXPRESSION FROM ITS PHYSIOLOGICAL STIMULI AFTER 2,3,7,8-TETRACHLORODIBENZO-p-DIOXIN TREATMENT IN THE MALE SPRAGUE-DAWLEY RAT. B U Stahl<sup>1,2</sup>, D G Beer<sup>1,3</sup>, M Lebofsky<sup>1</sup> and K Rozman<sup>1,2</sup>. <sup>1</sup>Dept. Pharmacol. Toxicol. Therap. Univ. of Kansas Med. Center, Kansas City, KS; <sup>2</sup>Section of Environmental Toxicology, GSF-Institut für Toxikologie, Neuherberg (FRG) and <sup>3</sup>Thoracic Surgery Res. Lab., Univ. of Michigan, Ann Arbor, MI.

TUESDAY AFTERNOON, FEBRUARY 25  
CONVENTION CENTER—EXHIBIT HALL

## POSTER SESSION: REPRODUCTIVE TOXICOLOGY I

Chairpersons: Frank Welsch, CIIT, Research Triangle Park, NC and Donald R. Mattison, University of Pittsburgh, Pittsburgh, PA

Displayed: 1:30 p.m.—4:30 p.m.

Attended: 1:30 p.m.—3:00 p.m.

#719

CHLORDIMEFORM (CDF) DISRUPTION OF BRAIN-PITUITARY CONTROL OF GONADAL FUNCTION: INFLUENCE OF SEX AND DURATION OF EXPOSURE. R L Cooper, J M Goldman, S C Laws, G L Rehnberg, R E Linder, RTB, DTD, HERL, US EPA, RTP, NC and T E Stoker, ManTech Envir. Tech., RTP, NC. Sponsor: R Kavlock.

#720

MOUSE PREPUTIAL GLANDS ARE SUPPRESSED BY SECALONIC ACID D. C B Williford<sup>1</sup>, M M R Eldeib<sup>2</sup>, E Umstot<sup>3</sup>, V K Ganjam<sup>4</sup>, and C S Reddy<sup>5</sup>. <sup>1,4,5</sup>Dept. Vet., Pathology, and Vet. Biomed. Sciences, Univ. MO, Columbia, MO. <sup>2</sup>Dept. Pediatrics, Univ. AR, Med. Sciences, Little Rock, AR; and <sup>3</sup>Dept. Ob/Gyn, UTCHS, Memphis, TN.

#721

THE INFLUENCE OF PHENOBARBITAL ON THE TERATOGENICITY OF 13-CIS-RETINOIC ACID IN CF-1 MICE. R F Gaudieri and M M Yuschak. Dept. of Pharmaceutical Sciences, Temple Univ. School of Pharmacy, Philadelphia, PA. Sponsor: L A Goldsmith.

#722

REPRODUCTIVE TOXICITY EVALUATION OF RECOMBINANT HUMAN INTERFERON- $\gamma$  IN THE CYNOMOLGUS MONKEY. P K Working, U Zuhlke\*, F Vogel\*, R Korte\*, M E Lewandowski and J D Green. Genentech, Inc., S. San Francisco, CA and \*Hazleton Laboratories, Muenster, Germany.

- #723 **REPRODUCTIVE TOXICITY OF CARISOPRODOL (CARI) AS EVALUATED BY THE CONTINUOUS BREEDING PROTOCOL.** T B Grizzle, J D George, P A Fail, and \*J J Heindel. Research Triangle Institute, and \*National Toxicology Program/NIEHS, RTP, NC.
- #724 **EFFECT OF TRANS-STILBENE ON FERTILITY OF FEMALE RATS.** R S Nair and L D Kier, Monsanto Company, St. Louis, MO.
- #725 **REPRODUCTIVE TOXICITY OF CRESOL ISOMERS ADMINISTERED IN FEED TO MOUSE BREEDING PAIRS.** M K Izard, P A Fail, J D George, T B Grizzle, and \*J J Heindel. Research Triangle Institute and \*NTP/NIEHS, RTP, NC.
- #726 **DEVELOPMENTAL TOXICITY STUDIES OF LEWISITE IN RATS AND RABBITS.** P L Hackett (deceased), L B Sasser, R L Rommereim, D L Buschbom, D R Kalkwarf and J C Dacre. Pacific Northwest Laboratory, Richland, WA and US Army Biomedical Research Development Laboratory, Ft. Detrick, Frederick, MD.
- #727 **TWO GENERATION REPRODUCTION STUDY OF LEWISITE IN RATS.** L B Sasser, R L Buschbom, J C Dacre. Pacific Northwest Laboratory, Richland, WA and U.S. Army Biomedical Research Development Laboratory, Ft. Detrick, Frederick, MD.
- #728 **REPRODUCTIVE TOXICITY OF NITROFURAZONE (NTFZ) ADMINISTERED IN THE FEED TO MOUSE BREEDING PAIRS.** J D George, P A Fail, T B Grizzle, and \*J J Heindel. Research Triangle Institute and \*National Toxicology Program/NIEHS, Research Triangle Park, NC.
- #729 **ASSOCIATION OF LIVER NECROSIS WITH MATERNAL DEATHS IN A ONE GENERATION REPRODUCTION STUDY OF ELEMENTAL PHOSPHORUS.** E Stephens<sup>1</sup>, R Nair<sup>1</sup>, B Carlton<sup>2</sup>, M L Weiner<sup>3</sup>, L Smith<sup>4</sup>, J Heussner<sup>5</sup>, and R Schroeder<sup>5</sup>. Monsanto Co., St. Louis, MO<sup>1</sup>, Rhone-Poulenc Rorer, Research Triangle Park, NC<sup>2</sup>, FMC Corp., Niagara Falls, NY<sup>3</sup>, Occidental Chemical Corp.<sup>4</sup>, Tenneco, Houston, TX<sup>5</sup>, and Bio/dynamics Inc., East Millstone, NJ<sup>6</sup>.
- #730 **REPRODUCTIVE TOXICITY OF SALICYLAZOSULFAPYRIDINE (SASP) IN SPRAGUE-DAWLEY RATS.** D K Gulati, E Hope, L K Grimes, L H Barnes, S Russell, R E Chapin\*. Environmental Health Research Testing, Lexington, KY and \*National Toxicology Program, NIEHS, RTP, NC.
- #731 **ANTIFERTILITY EFFECTS OF INDAZOLE CARBOXYLIC ACID (ICA) DERIVATIVES IN MALE RATS.** A K Didolkar and K Sundaram. The Population Council, New York, NY.
- #732 **A DECADE OF RABBIT FERTILITY DATA—STUDY OF HISTORICAL CONTROL ANIMALS.** E L Feussner, G E Lightkep, R A Hennesy, A M Hoberman, and M S Christian. Argus Research Laboratories, Inc., Horsham, PA.
- #733 **DEVELOPMENTAL TOXICITY EVALUATION OF SILICONE GEL AND SILASTIC® II MAMMARY ENVELOPE IMPLANTS IN RABBITS.** W H Siddiqui and J L Schardein\*. Dow Corning Corporation, Midland, MI, \*Intl. Res. and Develop. Corp., Mattawan, MI.
- #734 **PROPYLENE DICHLORIDE (PDC): A TWO-GENERATION REPRODUCTIVE TOXICITY AND DOMINANT LETHAL MUTAGENICITY STUDY IN RATS.** T R Hanley, H D Kirk, K A Johnson, D M Bond, K E Stebbins, and W J Breslin. The Toxicology Research Laboratory, Dow Chemical Co., Midland, MI.
- #735 **LATE GESTATIONAL HYPOCALCEMIA AND MORTALITY IN CLODRONATE-TREATED PREGNANT RATS.** S Lerman<sup>1</sup>, R Veneziale<sup>1</sup>, B Mumbauer<sup>1</sup>, D Dawson<sup>1</sup>, J McAlister<sup>1</sup>, R Wells<sup>1</sup>, J Sanders<sup>1</sup>, T Karhi<sup>2</sup>, E Lochry<sup>3</sup>, and A Hoberman<sup>3</sup>. Rhone-Poulenc Rorer Central Research, Horsham, PA; <sup>2</sup>Leiras, Turku, Finland; and <sup>3</sup>Argus Research Laboratories, Inc., Horsham, PA.

**TUESDAY AFTERNOON, FEBRUARY 25  
CONVENTION CENTER—EXHIBIT HALL**

## **POSTER SESSION: HEPATIC CARCINOGENESIS**

**Chairperson:** Michael A. Pereira, Environmental Health Research Testing Inc., Cincinnati, OH

**Displayed:** 1:30 p.m.—4:30 p.m.

**Attended:** 3:00 p.m.—4:30 p.m.

- #736 **ANCHORAGE-INDEPENDENT GROWTH, TUMOURIGENICITY AND HA-RAS CODON 61 MUTATIONS OF CELL LINES ISOLATED FROM MOUSE HEPATIC TUMOURS.** M S Pedrick, V Wright, P C Rumsby, H E Phillimore, W H Butler, and J G Evans. BIBRA Toxicology International, Carshalton, UK.
- #737 **INDUCTION OF LIVER GST-P POSITIVE FOCI IN WEANLING AND PARTIAL HEPATECTOMIZED YOUNG ADULT F344 RATS.** P C Chan, C H Meng, and E Zeiger. National Institute of Environmental Health Sciences, Research Triangle Park, NC. Sponsor: R R Maronpot.
- #738 **DNA FINGERPRINT ANALYSIS C3H/He MOUSE LIVER TUMOURS DERIVED SPONTANEOUSLY OR INDUCED WITH DIETHYLNITROSAMINE OR PHENOBARBITONE.** P C Rumsby, H E Phillimore, and J G Evans. BIBRA, Carshalton, Surrey, BK. Sponsor: B G Lake.
- #739 **RELATIONSHIP BETWEEN HEPATOCYTE NECROSIS, REPLICATION AND INITIATION INDUCED BY DIETHYLNITROSAMINE (DEN) IN RAT LIVER.** M Kato, J Popp and R Cattle. CIIT, RTP, NC.

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PROTO- am/NIEHS,	#740	HYPOMETHYLATION OF THE RAF PROTO-ONCOGENE IN PHENOBARBITAL (PB)-INDUCED MOUSE LIVER TUMOURS. <i>J I Goodman, J S Ray, M L Harbison*, and R M McClain*</i> . Dept. of Pharmacology and Toxicology, Michigan State Univ., East Lansing, MI and *Dept. of Toxicology and Pathology, Hoffmann-La Roche, Nutley, NJ.
St. Louis,	#741	BIOTRANSFORMATION IN CARCINOGEN-INDUCED DIPLOID AND POLYPLOID HEPATOCYTES SEPARATED BY CENTRIFUGAL ELUTRIATION. <i>J B Watkins III, D Thierau and L R Schwarz</i> . Indiana University School of Medicine, Medical Sciences Program, Bloomington, IN and GSF-Munchen, Neuherberg, Germany.
M K Izard,	#742	ALTERED EXPRESSION OF GAP JUNCTIONS IN MOUSE TUMORS. <i>A F Smith, Z Xie, A Kwiatkowski, E Dupont, J Trosko, and J E Klaunig</i> . Dept. of Pharmacology and Toxicology, Indiana Univ., Indianapolis, IN. and Dept. Pediatrics/Human Develop., Michigan State Univ., East Lansing, MI.
sser, R L ny	#743	INDUCTION OF REPLICATIVE DNA SYNTHESIS IN CULTURED MOUSE HEPATOCYTES AFTER EXPOSURE TO NONGE- NOTOXIC CARCINOGENS. <i>J Cao, J A Popp, and J E Klaunig</i> . Dept. of Pharmacology and Toxicology, Indiana Univ., Indianapo- lis, IN and Chemical Industry Institute of Toxicology, Research Triangle Park, NC.
ific North- c, MD.	#744	INDUCTION OF REPLICATIVE DNA SYNTHESIS (RDS) IN MOUSE LIVER LESIONS AFTER EXPOSURE TO PHENOBARBI- TAL. <i>K L Steinmetz and J E Klaunig</i> . Dept. of Pharmacology and Toxicology, Indiana University School of Medicine, Indianapolis, IN.
ING PAIRS. IS, Research	#745	INHIBITION OF LIVER GROWTH BY CHRONIC TREATMENT WITH THE TUMOR PROMOTER ETHINYL ESTRADIOL. <i>J D Yager, J Zurlo, and H He</i> . Division of Toxicological Sciences, Johns Hopkins School of Hygiene and Public Health, Baltimore, MD.
TUDY OF er <sup>2</sup> . Occidental	#746	THE ENHANCED GROWTH RESPONSIVENESS OF HEPATOCYTES TO TRANSFORMING GROWTH FACTOR-ALPHA AS A RESULT OF ESTROGEN TREATMENT. <i>N Ni and J D Yager</i> . Division of Toxicological Sciences, Johns Hopkins School of Hygiene and Public Health, Baltimore, MD.
iti, E Hope, onal	#747	EFFECT OF SEQUENTIAL OR CONCURRENT ADMINISTRATION OF PHENOBARBITAL AND WY14,643 ON RAT HEPATO- CARCINOGENESIS. <i>H C Pitot<sup>1</sup>, Y P Dragan<sup>1</sup>, and J A Popp<sup>2</sup></i> . McArdle Laboratory <sup>1</sup> , Madison, WI and CIIT <sup>2</sup> , Research Triangle Park, NC.
dkar and K	#748	TAMOXIFEN AND TWO FIXED RING ANALOGS AS PROMOTING AGENTS IN FEMALE RAT LIVER. <sup>1</sup> <i>Y P Dragan, S M Fahey, J R Vaughn, R McCague, V C Jordan, and H C Pitot</i> . McArdle and <sup>2</sup> Dept of Human Oncology, Univ. of WI, Madison, WI and <sup>3</sup> CRC, Surrey, UK.
MPLANTS orp.,	#749	EFFECTS OF CORN OIL, TIME-RELATED CHANGES, AND INTERLABORATORY VARIABILITY ON TUMOR OCCUR- RENCE IN CONTROL FISCHER 344 (F344/N) RATS. <i>J K Haseman, and G N Rao</i> . National Institute of Environmental Health Sciences, Research Triangle Park, NC.
HAL MUTA- xicology	#750	TARGET ORGAN CELL PROLIFERATION INDUCED BY VARIOUS INITIATING AGENTS. <i>Y Yoshida, K Takaba, S Iwasaki, M Tatematsu, and N Ito</i> . 1st Dept. Pathol., Nagoya City Univ. Med. Sch., Nagoya, Japan.
Lerman <sup>1</sup> , R hone- rsham, PA.	#751	SCREENING FOR CARCINOGENICITY OF ALACHLOR MIXTURES WITH ATRAZINE AND GLYPHOSPHATE USING A RAPID BIOASSAY. <i>K Akagi, R Cabral, T Hoshiya, K Hakoi, R Hasegawa, and N Ito</i> . 1st Dept, Pathology, Nagoya City University Medical School, Nagoya, Japan.
	#752	MEDIUM-TERM LIVER BIOASSAY SYSTEM: SUMMARY OF 198 CHEMICALS. <i>T Masui, H Tsuda, M Tatematsu, R Hasegawa, and N Ito</i> . 1st Dept., Pathol., Nagoya City Univ. Med. Sch., Nagoya, Japan.
	#753	DEVELOPMENT OF MEDIUM-TERM BIOASSAY FOR CARCINOGENS USING RAT MULTI-ORGAN CARCINOGENESIS MODELS. <i>H Yada, S Fukushima, S Tamano, A Hagiwara, R Cabral, M Hirose, and N Ito</i> . 1st Dept. Pathology, Nagoya City Univ. Med. Sch., Nagoya, Japan.
	#754	DOSE DEPENDENT EFFECTS OF 2-AMINO-3-METHYL-9H-PYRIDO-[2,3-b] INDOLE (MeAcC) AND 2-AMINO-1-METHYL- 6-PHENYLMIDAZO [4,5-b] PYRIDINE (PhMP) ON PRENEOPLASTIC LESION DEVELOPMENT ON RAT LIVER. <i>M A Shi- bata, S Takahashi, R Hasegawa, N Ito, S Takayama<sup>1</sup> and T Sugimura<sup>1</sup></i> . 1st Dept. Pathol., Nagoya City Univ. Med. Sch., Nagoya, Japan; <sup>1</sup> Natl. Cancer Center Res. Inst., Tokyo, Japan.
L LINES ; and J G	#755	A NEW MEDIUM TERM BIOASSAY FOR THE CARCINOGENICITY OF PESTICIDES. <i>R Cabral*, T Hoshiya, K Hakoi, R Hasegawa, and N Ito</i> . 1st Dept. Pathology, Nagoya City Univ. Medical School, Nagoya, Japan and *IARC/WHO, Lyon, France.
ULT F344 ark, NC.	#756	AN EVALUATION OF THE CARCINOGENICITY OF THE CHLOROACETIC ACIDS IN THE MALE F344 RAT. <i>A B DeAngelo, and F B Daniel</i> . U. S. Environmental Protection Agency, RTP, NC and Cincinnati, OH.
WITH on, Surrey,	#757	MONONUCLEAR CELL LEUKEMIA IN FISCHER 344 MALE RAT LIVER TUMORIGENESIS. <i>C L Alden and R D Bruce</i> . Procter & Gamble, Cincinnati, OH.
VLNITRO-	#758	INFLUENCE OF IRON OVERLOAD ON LIVER TUMOR INCIDENCE AND DRUG METABOLIZING ACTIVITIES INDUCED BY HEXACHLOROBENZENE IN FEMALE RATS. <i>A G Smith, J E Francis, P Carthew and M M Manson</i> . Toxicology Unit, Medical Research Council, Surrey, UK. Sponsor: <i>L L Smith</i> .

- #759 **EFFECTS OF DIETARY VITAMIN A ON HEPATIC ULTRASTRUCTURE IN A TWO-STAGE HEPATOCARCINOGENESIS MODEL IN THE RAT.** *S K Durham, A J Wasserman, H P Glauert, C K Chow, J R Megill and L W Robertson.* Univ of Arkansas for Medical Sciences, Little Rock, AR; Univ of Kentucky, Lexington, KY.
- #760 **THE ROLE OF AN ALPHA-CLASS GST-AASE IN AFLATOXIN B<sub>1</sub> - INDUCED HEPATOCARCINOGENESIS IN THE RAT.** \*G E Neal, \*J D Hayes, \*L I McLellan, \*L A Kerr, and \*S D Peacock. \*Toxicology Unit, MRC Labs., Carshalton, UK. \*Dept. of Clinical Chemistry, The Royal Infirmary, Edinburgh, Surrey, UK. Sponsor: *L L Smith.*
- #761 **LUNG AND LIVER LESIONS INDUCED BY MULTIPLE INTRATRACHEAL INSTILLATIONS OF AFLATOXIN B<sub>1</sub>.** D W Wilson, R A Harris, and R A Coulombe. Department of Veterinary Pathology, University of California-Davis, Davis, CA and Center for Environmental Toxicology, Utah State University, Logan, UT.
- #762 **INFLUENCE OF CHOLINE DEFICIENCY ON CHRONIC DOSING OF AFLATOXIN B<sub>1</sub> (AFB<sub>1</sub>) IN THE LIVERS OF FISHER 344 RATS.** *T F Schrager and P M Newberne.* Mallory Institute of Pathology, Boston University School of Medicine, Boston, MA.
- #763 **GENOTOXIC DAMAGE IN LIVER FOLLOWING INHALATION EXPOSURE TO AFLATOXIN B<sub>1</sub> IN RATS.** A Zarba, R Hmielecki, G Jakab, J D Groopman. Dept. of Environmental Health Sci., The Johns Hopkins School of Hygiene and Public Health, Baltimore, MD.
- #764 **TEMPERATURE AFFECTS INITIATION AND PROMOTION OF AFLATOXIN B<sub>1</sub> (AFB<sub>1</sub>)-INDUCED HEPATIC TUMORS IN RAINBOW TROUT.** *H M Carpenter<sup>1</sup>, Q Zhang<sup>1</sup>, G S Bailey<sup>2</sup>, J O Hendricks<sup>2</sup>, D R Buhler<sup>3</sup>, C L Miranda<sup>3</sup>, and L R Curtis<sup>1</sup>.* Departments of <sup>1</sup>Fisheries and Wildlife; <sup>2</sup>Food Science and Technology; and <sup>3</sup>Agricultural Chemistry, Oregon State University, Corvallis, OR.
- #765 **THE SIGNIFICANCE OF INDUCTION OF CYTOCHROME P4501A1 BY INDOLE-3-CARBINOL (I3C), AN ANTICARCINOGEN PROTECTIVE AGAINST AFLATOXIN B<sub>1</sub> (AFB<sub>1</sub>) HEPATOCARCINOGENESIS IN RAINBOW TROUT.** N Takahashi, D M Stresser, D E Williams and G S Bailey. Department of Food Science and Marine/Freshwater Biomedical Center, Oregon State University, Corvallis, OR.
- #766 **DIETARY HYDROGEN PEROXIDE PROMOTES HEPATOCARCINOGENESIS IN TROUT: CORRELATION TO 8-HYDROXY-2'-DEOXYGUANOSINE LEVELS IN LIVER DNA.** *J D Kelly, G A Orner, J D Hendricks and D E Williams.* Marine/Freshwater Biomedical Center and Toxicology Program, Oregon State Univ., Corvallis, OR.
- #767 **ACETYLAMINOFLUORENE (AAF) METABOLISM IN TWO SMALL FISH SPECIES, MEDAKA AND GUPPY.** *M O James, W E Hawkins and W W Walker.* Dept. of Medicinal Chemistry, University of Florida, Gainesville, FL and Gulf Coast Research Lab., Ocean Springs, MS.
- #768 **COMPARATIVE CARCINOGENICITY OF ETHYLENE THIOUREA WITH OR WITHOUT PERINATAL EXPOSURE IN RATS AND MICE.** *R S Chhabra, S Eustis, J Haseman, B Carlton\*, and P Kurtz\*.* NIEHS, Research Triangle Park, NC and Battelle Laboratories\*, Columbus, OH.

**TUESDAY AFTERNOON, FEBRUARY 25  
CONVENTION CENTER—EXHIBIT HALL**

## **POSTER SESSION: METALS TOXICOLOGY I**

**Chairpersons:** Maryka H. Bhattacharyya, Argonne National Laboratory, Argonne, IL.

**Displayed:** 1:30 p.m.—4:30 p.m.

**Attended:** 1:30 p.m.—3:00 p.m.

- #769 **TIME RELATION OF METAL EFFECTS ON HUMAN RED BLOOD CELL CATALASE.** M Martin-Mateo, P K Chien, and A Furst. Department of Biochemistry, University of Valladolid, Spain and Department of Biology, Univ. San Francisco, San Francisco, CA, USA.
- #770 **INTERACTION OF METAL CATIONS WITH GLUCOSE-6-PHOSPHATASE ACTIVITY IN LIVER OF RAT.** T C Stewart, C McNeil, A Cooper, C S Chetty and B Rajanna. Div. of Natural Sci., Selma Univ., Selma, AL. Sponsor: *D Desaiiah.*
- #771 **OCCUPATIONAL HEAVY-METAL EXPOSURE AND THROMBOCYTOPENIA —A FOCUS FOR NEW RESEARCH.** *S D Meadows.* PRC Environmental Management, Inc., Los Alamos, NM. *C P Weis,* U S Environmental Protection Agency, Denver, CO.
- #772 **DISPOSITION AND HEME OXYGENASE INDUCTION AFTER INTRAVENOUS COBALT CHLORIDE ADMINISTRATION.** J M Firriolo and D E Carter. Univ. of Arizona, Dept. Pharm. and Tox., Tuscon, AZ.
- #773 **ASSESSMENT OF ALUMINUM (Al) MOBILIZATION BY 3-HYDROXYPYRIDIN-4-ONE CHELATORS IN THE Al-LOADED RAT: A MICRODIALYSIS STUDY.** *R A Yokel.* College of Pharmacy and Graduate Center for Toxicology, University of KY, Lexington, KY.
- #774 **ORAL BIOAVAILABILITY EVALUATION OF METAL CHELATING 3-HYDROXYPYRIDIN-4-ONES IN RABBITS.** A M Fredenburg<sup>1</sup>, T L Skinner<sup>2</sup>, P J Wedlund<sup>1,2</sup>, L A Damani<sup>3</sup>, and R A Yokel<sup>1,2</sup>. Graduate Center for Toxicology<sup>1</sup> and College of Pharmacy<sup>2</sup>, University of Kentucky, Lexington, KY and Department of Pharmacy, King's College London, England.<sup>3</sup>
- #775 **ORAL ALUMINUM REDUCES HEPATIC ABILITIES WITHOUT AN INCREASE OF THE METAL: I. CYCLIC-AMP PRODUCTION BY GLUCAGON; II. ATP METABOLISM UNDER ISCHEMIA.** C Sugawara and N Sugawara, Dept. of Public Health, Sapporo Medical College, Sapporo, Japan. Sponsor: *K T Suzuki.*

- #776 ALUMINUM ACCUMULATION AND NEUROTOXICITY AFTER CHRONIC EXPOSURE TO ALUMINUM AND CITRATE. P I Oteiza<sup>1</sup>, B Han<sup>2</sup>, C L Keen<sup>3</sup>, and M S Golub<sup>2</sup>. <sup>1</sup>Dept. de Quimica Biologica, Univ. de Buenos Aires, Argentina; <sup>2</sup>Dept. of Nutrition and <sup>3</sup>Dept. of Internal Medicine, University of California, Davis, CA.
- #777 THE INFLUENCE OF HARDNESS AND HUMIC ACID (HA) ON THE ACUTE AND SUB ACUTE TOXICITY OF ALUMINUM (Al) TO RAINBOW TROUT AT ALKALINE pH. D T Gundersen, S Bustaman, W K Steim and L R Curtis. Oregon State University, Corvallis, OR.
- #778 COLLECTION AND CHARACTERIZATION OF MINE WASTE AND LEAD-BASED PAINT FOR THE PURPOSE OF DETERMINING LEAD BIOAVAILABILITY. C P Weis, USEPA, Denver, CO; K Hemlein, R F Weston, Inc., Lakewood, CO; and J Drexler, Department of Geology, University of Colorado, Boulder, CO. Sponsor: J M LaVelle.
- #779 THE BIOAVAILABILITY OF LEAD SALTS AND LEAD ORES IN F344 RATS. M P Dieter, R S Chhabra, J R Bucher, and H B Matthews. NIEHS National Toxicology Program, Research Triangle Park, NC.
- #780 EFFECTS OF DIETARY CALCIUM AND LEAD ON BLOOD PRESSURE. S B Gertner, J D Bogden, F W Kemp, Z Yang, and S R Katz. UMDNJ-New Jersey Medical School, Newark, New Jersey. Sponsor: L G Sultatos.
- #781 CONTRIBUTION OF LEAD IN WINE TO INCREASED RISK FOR FETAL DEVELOPMENTAL NEUROTOXICITY. S M Loscuttoff<sup>1</sup>, A J Quattrone<sup>1</sup>, M J DiBartolomeis<sup>2</sup> and A M Fan<sup>2</sup>. <sup>1</sup>CA Dept of Health Services, Sacramento, CA and <sup>2</sup>CA Office of Environmental Health Hazard Assessment, Berkeley, CA.
- #782 LEAD CONTAMINATION IN CALCIUM MINERAL SUPPLEMENTS MAY CAUSE FETAL AND CHILDHOOD TOXICITIES. A J Quattrone<sup>2</sup>, B P Bourgoin<sup>1</sup>, R D Evans<sup>1</sup>, R J Cornett<sup>1</sup> and S M Lingard<sup>1</sup>. <sup>1</sup>Trent University, Peterborough, Ontario, CANADA, and <sup>2</sup>California Department of Health Services, Sacramento, CA.
- #783 PREDICTING BLOOD LEAD DURING HUMAN PREGNANCY. E J O'Flaherty and M D Andriot. Dept. of Environmental Health, University of Cincinnati, Cincinnati, OH.
- #784 TRANSPLACENTAL TRANSFER OF LEAD IN THE FEMALE CYNOMOLGUS MONKEY *Macaca fascicularis*: MATERNAL AND FETAL BLOOD AND BONE LEAD CONCENTRATIONS FOLLOWING EXPOSURE DURING PREGNANCY. F W Wandelaar, C A Franklin, M Inskip and K Subramanian. Environmental Health Directorate, Ottawa, Canada. Sponsor: I Chu.
- #785 REVERSIBILITY OF THE EFFECTS OF INORGANIC LEAD (Pb) EXPOSURE ON THE BODY GROWTH IN THE POST WEANING RAT. P B Hammond and D J Minneman. Dept. Environ Hlth, Univ. Cincinnati, Cincinnati, OH.
- #786 PATERNAL EXPOSURE TO LEAD (Pb) ALTERS INITIAL GENOMIC EXPRESSION IN OFFSPRING. R E Gandley, M Couture, E K Silbergeld, L D Anderson and B A Fowler. Univ. of Maryland at Baltimore, Baltimore, MD.
- #787 INCREASED EXCRETION OF  $\alpha_2$ -U-GLOBULIN BY LEAD EXPOSURE. A Mathias, S Jacobson, E K Silbergeld, B A Fowler. Program in Toxicology, Univ. of Maryland, Baltimore, MD.
- #788 LEAD BINDING PROTEINS (PbBP) IN HUMAN TISSUES. M W Kahng, E A Conner, B A Fowler. Program in Toxicology, Univ. of Maryland, Baltimore, MD.
- #789 LEAD AND ENDOTOXIN INTERACTIONS MODULATE RAT SERUM OF LIVER CYTOSOLIC PROTEIN EXPRESSION. J G Pounds, and T Primiano. Inst. Chem. Toxicol., Wayne State Univ., Detroit, MI.
- #790 INTERACTION OF LEAD AND ZINC-BINDING PROTEINS. P Guity and J G Pounds. Institute of Chemical Toxicology, Wayne State Univ., Detroit, MI.
- #791 BONE LEAD (Pb) CONTENT MEASURED BY L-X-RAY FLUORESCENCE (LXRF) IN A RESIDENTIALLY LEAD-EXPOSED POPULATION COMPARED TO A NON-LEAD EXPOSED RESIDENTIAL POPULATION IN PENNSYLVANIA. J F Rosen and A Crocetti. Albert Einstein Coll. Med., Montefiore Med. Ctr., Bronx, NYC, NY.
- #792 DEPOLYMERIZATION OF GLOBIN MRNA BY PLUMBOUS ION *IN VIVO*. W R Farkas and A E Aethranis. University of Tennessee College of Veterinary Medicine and the Graduate Program in Environmental Toxicology, Knoxville, TN.

TUESDAY AFTERNOON, FEBRUARY 25  
CONVENTION CENTER—EXHIBIT HALL

## POSTER SESSION: TOXICOKINETICS

Chairperson: Steven D. Cohen, University of Connecticut, Storrs, CT

Displayed: 1:30 p.m.—4:30 p.m.

Attended: 3:00 p.m.—4:30 p.m.

- #793 INTRAVENOUS AND ORAL PHARMACOKINETICS OF THE PEPTIDOLEUKOTRIENE RECEPTOR ANTAGONISTS, SKF 107310 AND 106203 IN CYNOMOLGUS MONKEYS. J F Newton, L P Yodis, C M Saverino, R H Dewey, J Kissinger, L Meunier, D W P Hay, J Frazee, J Gleason and R D Eckardt. SmithKline Beecham Pharmaceuticals, Philadelphia, PA.
- #794 REVERSIBLE METABOLISM OF THE NOVEL SULFOXIDE ANTIINFLAMMATORY AGENT SKF 106978 IN MALE CYNOMOLGUS MONKEYS. R D Eckardt, L P Yodis, C M Saverino, R H Dewey, J Kissinger, L Meunier, J Adams and J F Newton. SmithKline Beecham Pharmaceuticals, Philadelphia, PA.

- #795 **PHARMACOKINETICS OF SALICYLAZOSULFAPYRIDINE (SASP) IN MALE B6C3F1 MICE.** *W Zheng, S M Winter, M Mayer-sohn\*, J G Sipes.* Depts. of Pharmacol/Toxicol. and \*Pharmaceut. Sci., University of Arizona, Tucson, AZ.
- #796 **INTERACTION TOXICITY STUDIES OF IPAZILIDE FUMARATE, A NEW ANTIARRHYTHMIC, AND DIGOXIN OR WARFARIN.** *G Descotes, C F Mary, E Penacchio, M Rollin, J F Gallas.* Drug Safety Assessment, Sterling Research Group, Dijon-Longvic, France.
- #797 **AGE-DEPENDENT PHARMACOKINETIC STUDIES OF TAZOBACTAM AND ITS MAJOR METABOLITE (M1) IN NEONATAL AND YOUNG BEAGLE DOGS.** *M Leal, E Schwartz\*, P Tham, J McAteer, K Shin, E Halperin-Walega.* Medical Research Division, American Cyanamid Company, Pearl River, NY. \*White Eagle Laboratories, Doylestown, PA. Sponsor: *D Novicki*
- #798 **COMPARISON OF ETHYLENE GLYCOL (EG) PHARMACOKINETICS AND DISPOSITION BY THREE ROUTES IN CD<sup>1</sup>-1 MICE.** *S W Frantz, M J Tallant, J L Beskitt, and B Ballantyne.* Bushy Run Research Center/Union Carbide Chemicals and Plastics Company, Inc., Export, PA.
- #799 **INTERACTIVE METABOLISM OF 4-METHYLPYRAZOLE AND ETHANOL IN HEALTHY HUMAN SUBJECTS.** *K E McMartin, D F Dies, D Jacobsen, C S Sebastian.* Louisiana State University Medical Center, Shreveport, LA.
- #800 **ACUTE HEPATO- AND NEPHROTOXICITY OF CHLOROFORM (CHCl<sub>3</sub>) IN MALE F344 RATS.** *J L Larson, D C Wolf, M L Gargas, and B E Butterworth.* CIIT, RTP, NC.
- #801 **INTRAVENOUS (IV) PHARMACOKINETICS OF ACRYLONITRILE (ACN) AND CYANOETHYLENE OXIDE (CEO) IN MALE F344 RATS.** *S Teo, M L Gargas, R Batra and G L Kedderis.* CIIT, RTP, NC.
- #802 **PHARMACOKINETICS AND METABOLISM OF HCFC-141b IN MALE FISCHER 344 RATS.** *G D Loizou and M W Anders.* Department of Pharmacology, University of Rochester, Rochester, NY.
- #803 **PHARMACOKINETICS AND METABOLISM OF 1,1-DICHLORO-2,2,2-TRIFLUOROETHANE (HCFC-123) IN MALE AND FEMALE SPRAGUE-DAWLEY RATS: A GAS-UPTAKE STUDY.** *G Urban<sup>1</sup>, G Loizou<sup>2</sup>, W Dekant<sup>1</sup>, and M W Anders<sup>2</sup>.* <sup>1</sup>Institut für Pharmakologie und Toxikologie, Universität Würzburg, Würzburg, FRG, and <sup>2</sup>Dept. of Pharmacology, Univ. of Rochester, Rochester, NY.
- #804 **PREDICTION OF TISSUE DISPOSITION OF TRICHLOROETHYLENE (TCE) USING A PHYSIOLOGICALLY-BASED PHARMACOKINETIC (PBPK) MODEL.** *V Srivatsan, P Varkonyi, S Muralidhara, \*J M Gallo, and J V Bruckner.* Dept. of Phar. Tox. and \*Dept. of Pharmaceutics, Univ. of GA, Athens, GA.
- #805 **COMPARTMENTAL MODEL FOR TRICHLOROETHYLENE (TCE) PHARMACOKINETICS FOLLOWING INTRAVENOUS AND PORTAL VEIN ADMINISTRATION.** *K Lee, P Varkonyi, S Muralidhara, J V Bruckner, and \*J M Gallo.* Department of Pharmacology & Toxicology and \*Department of Pharmaceutics, College of Pharmacy, University of Georgia, Athens, GA.
- #806 **DETERMINATION OF PERCHLOROETHYLENE (PERC) METABOLISM AND PHARMACOKINETICS IN B6C3F1 MICE BY DIFFERENT ROUTES OF EXPOSURE.** *J M Gearhart<sup>1</sup>, D A Mahle<sup>1</sup>, R J Greene<sup>2</sup> and J W Fisher<sup>2</sup>.* <sup>1</sup>ManTech Environ. Tech., <sup>2</sup>Tox. Div. Armstrong Lab., WPAFB, OH.
- #807 **PHARMACOKINETICS OF REPEATED PERCHLOROETHYLENE EXPOSURE IN B6C3F1 MICE.** *\*D R Tocco, J M Gearhart, \*Toxicology Division (OL-AL/OET), Armstrong Laboratory, WPAFB, OH and ManTech Environmental Technology, Inc., Dayton, OH. Sponsor: J N McDougal.*
- #809 **DISPOSITION AND PHARMACOKINETICS OF ISOPROPANOL IN F-344 RATS and B6C3F1 MICE.** *R W Slaughter<sup>1</sup>, D P Coleman<sup>1</sup>, N F Gaudette<sup>1</sup>, R H McKee<sup>2</sup>, L W Masten<sup>3</sup>, T H Gardiner<sup>4</sup>, D J Marino<sup>5</sup>, T R Tyler<sup>6</sup>, and A R Jeffcoat<sup>1</sup>.* <sup>1</sup>Research Triangle Institute, RTP, NC; <sup>2</sup>Exxon Biomedical Sciences, East Millstone, NJ; <sup>3</sup>ARCO Chemical Co., Newtown Square, PA; <sup>4</sup>Shell Oil Co., Houston, TX; <sup>5</sup>BP America, Cleveland, OH; <sup>6</sup>Union Carbide Corp., Danbury, CT.
- #810 **METABOLISM OF BENZENE BY NONHUMAN PRIMATES.** *R F Henderson, P J Sabourin, B A Muggenburg, R C Couch, L S Birnbaum and G W Lucier.* Inhalation Toxicology Research Institute, Albuquerque, NM; White Sands Research Center, Alamogordo, NM; National Institute of Environmental Health Sciences, Research Triangle Park, NC.
- #811 **KINETIC STUDY OF TOLUENE EXPOSURE IN MICE.** *T L Pravecek, K O Yu, G W Jepson, and J W Fisher.* Toxicology Division (OL-AL/OETA), Armstrong Laboratory, WPAFB, OH.
- #812 **ROUTE DEPENDENT METABOLISM OF <sup>14</sup>C-2, 4-TOLUENEDIISOCYANATE (TDI) FOLLOWING ORAL AND INHALATION EXPOSURE IN F344 RATS.** *C Timchalk, F A Smith, M J Bartels.* The Dow Chemical Company, Midland, MI.
- #813 **RATES OF 4-VINYLCYCLOHEXENE (4-VCH) METABOLISM IN RATS AND MICE DETERMINED BY GAS UPTAKE.** *D A Keller and G L King, Jr.* Haskell Laboratory for Toxicology and Industrial Medicine, The Du Pont Co., Newark, DE.
- #814 **DYNAMIC XENOBIOTIC METABOLISM MODELS EXPRESSED IN S-SYSTEM CANONICAL FORM.** *R L Guy and R Snyder.* Dept. of Pharmacology/Toxicology, Rutgers Univ., Piscataway, NJ.
- #815 **PHYSIOLOGICALLY BASED PHARMACOKINETIC (PB-PK) MODELING OF CHEMICAL MIXTURES: A RESEARCH PROGRAM DEVELOPMENT AT COLORADO STATE UNIVERSITY (CSU).** *J D Tessari, H S Ramsdell, R S H Yang.* Department of Environmental Health, Colorado State University, Ft. Collins, CO.

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- #816 **C.I. DISPERSE BLUE 79:1 (DB79): NINETY-DAY GAVAGE TOXICITY AND MATERIAL BALANCE STUDIES IN SPRAGUE-DAWLEY RATS.** J P Van Miller<sup>1</sup>, S W Frantz<sup>1</sup>, M J Tallant<sup>1</sup>, C T Helmes<sup>2</sup>, R E Ouellette<sup>3</sup> and S J Hermansky<sup>1</sup>. <sup>1</sup>Bushy Run Research Center/Union Carbide Chemicals and Plastics Company Inc., Export, PA. <sup>2</sup>Ecological and Toxicological Association of the Dyestuffs Manufacturing Industry, Washington, DC. <sup>3</sup>Hoechst Celanese Corporation, Somerville, NJ.
- #817 **TRIS(2-CHLOROETHYL) PHOSPHATE PHARMACOKINETICS: CONVENTIONAL METHODS AND *IN VIVO* MICRODIALYSIS COUPLED WITH COAXIAL CF-FAB TANDEM MASS SPECTROMETRY.** K D Washburn, L J Deterding, L T Burka and K B Tomer. NIEHS, RTP, NC. Sponsor: H B Matthews.
- #818 **BISMUTH-INDUCED HYDROCEPHALUS: BISMUTH CONCENTRATION VS. RATE OF ACCUMULATION.** S A Heitmeyer, S E Cappelli and J F Powers. The Procter & Gamble Co., Miami Valley Laboratories, Cincinnati, OH. Sponsor: T T Kawabata.
- #819 **TOXICOKINETICS OF RICIN IN ISOLATED PERFUSED RAT LIVERS.** J G Pace, C F Matson, M Leggett, K Bostian, and E Rivera. US Army Medical Research Institute of Infectious Diseases, Frederick, MD. Sponsor: R W Wannemacher, Jr.
- #820 ***IN VIVO* MICRODIALYSIS SAMPLING OF PHENOL AND PHENYLGLUCURONIDE IN THE BLOOD OF UNANESTHETIZED RAINBOW TROUT: IMPLICATIONS FOR TOXICOKINETIC STUDIES.** J M McKim, Jr, J M McKim, Sr, S Naumann and C D Klaassen. U S EPA, Environmental Research Laboratory, Duluth, MN and University of Kansas Medical Center, Kansas City, KS.
- #821 **HEPTACHLOR PHARMACOKINETICS AND METABOLISM IN FEMALE RHESUS MONKEYS.** D C Stauffer and R C Couch. White Sands Research Center, Alamogordo, NM.
- #822 **PHARMACOKINETICS OF CGA-163935 IN RATS FOLLOWING ACUTE ORAL DOSING.** G D Fisher and L M Gontarz. CIBA-GEIGY Corporation, Environmental Health Center, Farmington, CT. Sponsor: M W Sauerhoff.
- #823 **AMOUNT OF TRICLOPYR ABSORBED BY APPLICATORS APPLYING GARLON\* 4E HERBICIDE.** R J Nolan, B E Kropscott, B H Scortichini, + T S MacKay and + M G Rankin. Dow Chemical Co., Midland, MI; + DowElanco, Toronto, ONT; + + Dow Canada, Sarnia, ONT. Sponsor: A M Schumann.

**TUESDAY AFTERNOON, FEBRUARY 25  
CONVENTION CENTER—EXHIBIT HALL**

**POSTER SESSION: INHALATION I**

Chairperson: James Bond, CIIT, Research Triangle Park, NC

Displayed: 1:30 p.m.—4:30 p.m.

Attended: 1:30 p.m.—3:00 p.m.

- #824 **INHIBITION OF MACROPHAGE Fc RECEPTOR EXPRESSION BY ROAD DUST INHALATION.** D Bhalla, B Ziegler, S Oddo, R E Rasmussen, M T Kleinman, and D B Menzel. Community and Environmental Medicine, University of California, Irvine, CA.
- #825 **LEVELS OF AIRBORNE BACTERIA AND FUNGI ASSOCIATED WITH "SICK" AND "HEALTHY" HOMES.** P S Thorne and J LeVasseur. Dept of Preventive Medicine and Environmental Health, Univ. of Iowa, Iowa City, IA.
- #826 **PRODUCTION OF HYPERSENSITIVITY PNEUMONITIS (HP) IN MICE BY INHALATION OF SPORES OF MICROPOLYSPORA FAENI.** S D Kaliszewski, P S Thorne, and S A Bleuer. Dept. of Preventative Medicine and Environmental Health, University of Iowa, Iowa City, IA.
- #827 **ACUTE RESPIRATORY EFFECTS OF ENDOTOXIN-CONTAMINATED MACHINING FLUID AEROSOLS IN GUINEA PIGS.** T Gordon. NYC, Dept. of Env. Med., Tuxedo, NY.
- #828 **A SUBCHRONIC (4 WEEK) INHALATION TOXICITY STUDY OF A HIGH MOLECULAR WEIGHT EMULSION POLYMER IN THE RAT.** P E Newton<sup>1</sup>, L K Lake<sup>2</sup>, H F Bolte<sup>1</sup> and T G Osimitz<sup>2</sup>. <sup>1</sup>Bio/Dynamics Inc., East Millstone, NJ; <sup>2</sup>S C Johnson & Sons, Racine, WI.
- #829 **ACUTE INHALATION TOXICITY EFFECTS OF EXPLOSIVELY DISSEMINATED TITANIUM DIOXIDE (TiO<sub>2</sub>).** R J Hilaski, J C Carpin, and S A Thomson. U.S. Army Chemical Research, Development and Engineering Ctr., Research Directorate, Toxicology Division, Aberdeen Proving Ground, MD.
- #830 **APPARENT REGRESSION OF PULMONARY LESIONS PRODUCED BY INHALED TITANIUM DIOXIDE.** R Baggs, G Oberdoerster, and J Ferin. Environmental Health Sciences Center, Univ. of Rochester, Rochester, NY.
- #831 **SHORT-TERM INHALATION OF FINISH LUBRICANT AEROSOLS PRODUCES IRRITATION IN THE LUNGS OF EXPOSED RATS.** E A Freund, M A Hartsky, R Valentine, L Stanickyj, and D B Warheit. Du Pont, Haskell Lab, Newark, DE.
- #832 **IMMUNOTOXIC EFFECTS OF PM<sub>10</sub> IN RATS.** M T Kleinman, D K Bhalla and C Nadziejko. University of California, Irvine, Department of Community and Environmental Medicine, Irvine, CA. Sponsor: W J Mautz.
- #833 **STRAIN VARIATIONS IN PULMONARY RESPONSES TO INHALED CRYSTALLINE SILICA PARTICLES IN RATS.** S G Gavett, T McHugh, K Duespohl, M A Hartsky, and D B Warheit. Du Pont Co., Haskell Lab., Newark, DE.

- #834 SUBACUTE (28 DAY) REPEATED DOSE INHALATION TOXICITY OF CELLULOSE BUILDING INSULATION IN THE RAT. *J G Hadley*, P Kotin and D M Bernstein. Owens-Corning Fiberglas Technical Center, Granville, OH; Research and Consulting Co Geneva, Switzerland.
- #835 INFLUENCE OF PARTICLE SIZE ON THE PULMONARY RESPONSE TO MINERAL DUST. *K E Driscoll*, J K Maurer, D Hassenbein, J Poynter. Procter & Gamble Company, Cincinnati, OH.
- #836 INHALATION STUDY OF A SANWET® SUPERABSORBENT POLYMER IN RATS. *T Hofmann*<sup>1</sup>, H-L Schmidts<sup>1</sup>, R Kreiling<sup>1</sup>, *Cascieri*<sup>2</sup>, *G Loewengart*<sup>2</sup>, and *R Jung*<sup>1</sup>. <sup>1</sup>Hoechst AG, Frankfurt am Main, Germany; <sup>2</sup>Hoechst Celanese Corp., Somerville, NJ.
- #837 CONTRIBUTIONS OF DIESEL EXHAUST AND OIL SHALE DUST TO EFFECTS OF MIXED CHRONIC INHALATION EXPOSURES. *J L Mauderly*, E B Barr, A F Eidson, *J R Harkema*, *R F Henderson*, *J A Pickrell*, and *R K Wolff*. Inhalation Toxicology Research Institute, Albuquerque, NM.
- #838 NINE-DAY AEROSOL INHALATION STUDY OF UCARLINK® XL-29 IN RATS. *J S Chun*, *H D Burleigh-Flayer*, and *T R Tyler*. Bushy Run Research Center/Union Carbide Chemicals and Plastics Company Inc., Export, PA.
- #839 HAMSTER RESPONSE TO CHRONIC TEST TONER INHALATION. *R Mermelstein*<sup>1</sup>, O Creutzenberg<sup>2</sup>, C Dasenbrock<sup>2</sup>, E Ernsberger<sup>3</sup>, M Kuschner<sup>3</sup>, U Mohr<sup>2</sup> and H Muhle<sup>2</sup>. <sup>1</sup>Corporate Environmental Health Safety, Xerox Corp., Rochester, NY; <sup>2</sup>Fraunhofer Institute for Toxicology, Hannover, Germany; <sup>3</sup>Dept. of Pathology, State Univ. of New York at Stony Brook, NY.
- #840 ADMINISTRATION OF A DRY POWDER VIA TRACHEOSTOMY TO BEAGLE DOGS. B T Anderson, P McDonald. Inveresk Research International Ltd, Tranent, Scotland. Sponsor: *A B Wilson*.
- #841 LUNG RETENTION OF PARTICLES AFTER INTRATRACHEAL INHALATION OR INTRATRACHEAL INSTILLATION. *G Oberdoerster*, C Cox, R Gelein, N Corson, P Mercer and K Nguyen. University of Rochester, Environmental Health Sciences Center, Rochester, NY.
- #842 SUBCHRONIC INHALATION TOXICITY OF AQ55 IN THE RAT. M S Vlaovic, W D Faber, L G Bernard, G V Katz, and D C Topping. Eastman Kodak Company, Rochester, NY.
- #843 POTENTIAL INVOLVEMENT OF HYDROFLUORIC ACID IN PERFLUOROISOBUTYLENE-INDUCED LUNG INJURY. *J R Brainard*, S A Kinkad, G Wood, D M Stavert, and *B E Lehnert*. Los Alamos National Laboratory, Los Alamos, NM.
- #844 BIOCHEMICAL CHANGES IN LAVAGE FLUIDS FROM RESTED AND EXERCISED RATS PRIOR TO OVERT PULMONARY EDEMA INDUCED BY PERFLUOROISOBUTYLENE (PFIB). L R Gurley, D M Stavert, T Ellis, W Session, and *B E Lehnert*. Life Sciences Division, Los Alamos National Laboratory, Los Alamos, NM.
- #845 FLOW-VOLUME (V-VT) CURVES AND TRANSPULMONARY PRESSURE MEASUREMENTS IN MICE TO INVESTIGATE THE INFLUENCE OF AIRBORNE CHEMICALS ON THE RESPIRATORY SYSTEM. *R Vijayaraghavan*, *M Schaper*, *M F Stock*, and *Y Alarie*. Univ. of Pittsburgh, Pittsburgh, PA.
- #846 ENHANCEMENT OF HYDROGEN SULPHIDE TOXICITY BY CAPSAICIN. M G Prior, F H Y Green, D Yee, and G De Sanctis. Alberta Environmental Centre, Vegreville, Alberta, Canada and Health Sciences Centre, University of Calgary, Calgary, Alberta, Canada. Sponsor: *R W Coppock*.
- #847 LUNG INJURY AFTER INHALATION EXPOSURE TO DIFFERING MASS CONCENTRATIONS OF PHOSGENE. D M Stavert, W Session, L R Gurley, and *B E Lehnert*. Los Alamos National Laboratory, Los Alamos, NM.
- #848 KINETICS OF LUNG FREE CELL AND BIOCHEMICAL CHANGES IN LAVAGE FLUIDS FOLLOWING EXPOSURE TO A HIGH CONCENTRATION OF NITROGEN DIOXIDE (NO<sub>2</sub>). *B E Lehnert*, D M Stavert, T Ellis, W Session, and L R Gurley. Los Alamos National Laboratory, Los Alamos, NM.
- #849 TOXICOLOGIC INTERACTIONS BETWEEN OZONE AND NITROGEN DIOXIDE: RELATIONSHIP BETWEEN CHEMICAL REACTIVITY AND SYNERGISTIC EFFECTS. *T R Gelzleichter*, *H Witschi*, and *J A Last*. California Primate Research Center, University of California, Davis, CA.
- #850 EFFECT OF AGE ON OZONE-INDUCED PULMONARY CYTOTOXICITY AND ARACHIDONIC ACID METABOLISM. *P A Weideman*, M Sobo, and *A F Gunnison*. NYU Medical Center, Institute of Environmental Medicine, New York, NY.
- #851 MORPHOLOGIC CHANGES IN THE RABBIT LUNG FOLLOWING SHORT-TERM EXPOSURE TO SULFURIC ACID AND OZONE. *T A Kimmel*, J Dennison, D J Ohlmer, *R B Schlesinger*, and M C Bosland. Institute of Environmental Medicine, NYU Medical Center, Tuxedo, NY.
- #852 EFFECT OF ACUTE AND REPEATED EXPOSURE TO OZONE ON *IN VITRO* BRONCHIAL REACTIVITY. *T J McGovern*, *B A N El-Fawal*, and *R B Schlesinger*. Institute of Environmental Medicine, NYU Medical Center, Tuxedo, NY.
- #853 PULMONARY RESPONSES TO SULFURIC ACID AND OZONE—ASSESSING TOXICOLOGIC INTERACTIONS. *R B Schlesinger*, *J T Zelikoff*, *H El-Fawal*, P Kinney, and L C Chen. New York University, New York, NY.
- #854 BIOCHEMICAL AND FUNCTIONAL EFFECTS OF REPEATED OZONE (O<sub>3</sub>) EXPOSURE IN GUINEA PIGS. K M Crissman, Slade, J Norwood, *G E Hatch* and *J S Tepper*<sup>1</sup>. U.S. EPA and <sup>1</sup>ManTech Environmental, Research Triangle Park, NC.

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- #855 **MODIFICATION OF OZONE (O<sub>3</sub>) TOXICITY BY AMBIENT TEMPERATURE (T<sub>a</sub>) IN THE RAT: EFFECTS ON BRONCHOALVEOLAR LAVAGE FLUID (BAL).** M J Wiester, W P Watkinson, and D L Costa, HERL, US EPA, Research Triangle Park, NC. Sponsor: *J S Tepper*.
- #856 **OZONE TOXICITY IN THE UNANESTHETIZED, UNRESTRAINED RAT: EFFECT OF CHANGES IN AMBIENT TEMPERATURE ON PHYSIOLOGICAL PARAMETERS.** W P Watkinson, M J Wiester, M J Campen, and V M Richardson. US EPA, HERL, RTP, NC. Sponsor: *J S Tepper*.
- #857 **REACTION-DEPENDENT O<sub>3</sub> ABSORPTION IN ISOLATED RAT LUNGS.** *E M Postlethwait*, S D Langford, and A Bidani. Pulmonary Division, University of Texas, Galveston, TX.
- #858 **EFFECTS OF EXERCISE ON RAT RESPIRATORY TRACT EPITHELIAL INJURY FROM FORMALDEHYDE AND OZONE.** *W J Mautz*, C Bufalino, and T McClure. Dept. Community Environ. Med., Univ. Calif., Irvine, CA.

**TUESDAY AFTERNOON, FEBRUARY 25  
CONVENTION CENTER—EXHIBIT HALL**

## **POSTER SESSION: SOLVENTS**

**Chairperson:** Michael J. Olson, General Motors Research Laboratories, Warren, MI

**Displayed: 1:30 p.m.—4:30 p.m.  
Attended: 3:00 p.m.—4:30 p.m.**

- #859 **LACK OF BLOOD FORMATE (F) ACCUMULATION IN HUMANS FOLLOWING EXPOSURE TO METHANOL (M) VAPOR AT THE CURRENT PERMISSIBLE EXPOSURE LIMIT (PEL) OF 200 PPM.** *E W Lee*, T S Terzo, J B D'Arcy, K B Gross, and R M Schreck. General Motors Research Laboratories, Warren, MI.
- #860 **DEVELOPMENTAL TOXICITY EVALUATION OF ISOPROPANOL (IPA) BY GAVAGE IN CD (SPRAGUE-DAWLEY) RATS.** *R W Tyll*<sup>1</sup>, *L W Masten*<sup>2</sup>, *M C Marr*<sup>1</sup>, *C B Myers*<sup>1</sup>, *R W Slaughter*<sup>1</sup>, *T H Gardiner*<sup>3</sup>, *D J Marino*<sup>4</sup>, *R H McKee*<sup>5</sup>, and *T R Tyler*<sup>6</sup>. <sup>1</sup>Research Triangle Institute, RTP, NC.; <sup>2</sup>ARCO Chemical Co., Newtown Square, PA; <sup>3</sup>Shell Oil Co., Houston, TX; <sup>4</sup>BP America, Cleveland, OH; <sup>5</sup>Exxon Biomedical Sciences, E. Millstone, NJ; and <sup>6</sup>Union Carbide Corp., Danbury, CT.
- #861 **HAZARD ASSESSMENT OF ISOPROPYL ALCOHOL (IPA).** *T H Gardiner*<sup>1</sup>, *R H McKee*<sup>2</sup>, *T R Tyler*<sup>3</sup>, *D J Marino*<sup>4</sup>, and *L W Masten*<sup>5</sup>. <sup>1</sup>Shell Oil Co., Houston, TX; <sup>2</sup>Exxon Biomedical Sciences, East Millstone, NJ; <sup>3</sup>Union Carbide, Danbury, CT; <sup>4</sup>BP America, Cleveland, OH; <sup>5</sup>ARCO, Newtown Square, PA.
- #862 **ISOPROPANOL SINGLE EXPOSURE VAPOR INHALATION NEUROTOXICITY STUDY IN RATS.** *M W Gill*<sup>1</sup>, *H D Burleigh-Flayer*<sup>1</sup>, *D J Marino*<sup>2</sup>, *L W Masten*<sup>3</sup>, *R H McKee*<sup>4</sup>, *T R Tyler*<sup>1</sup>, and *T Gardiner*<sup>5</sup>. <sup>1</sup>Bushy Run Research Center/Union Carbide Chemicals and Plastics Company Inc., Export, PA; <sup>2</sup>BP America Inc., Cleveland, OH; <sup>3</sup>ARCO Chemical Company, Newtown Square, PA; <sup>4</sup>Exxon Corporation, East Millstone, NJ; <sup>5</sup>Shell Oil Company, Houston, TX.
- #863 **THE ADSORPTION OF ISOPROPANOL AND ACETONE TO ACTIVATED CHARCOAL.** *KK Burkhardt*, *M Martinez*. The Milton S. Hershey Medical Center, Pennsylvania State University, Hershey, PA. Sponsor: *E S Vesell*.
- #864 **DEVELOPMENTAL TOXICITY EVALUATION OF ISOPROPANOL (IPA) BY GAVAGE IN NEW ZEALAND WHITE (NZW) RABBITS.** *L W Masten*<sup>1</sup>, *R W Tyll*<sup>2</sup>, *M C Marr*<sup>2</sup>, *C B Myers*<sup>2</sup>, *R W Slaughter*<sup>2</sup>, *T H Gardiner*<sup>3</sup>, *D J Marino*<sup>4</sup>, *R H McKee*<sup>5</sup>, and *T R Tyler*<sup>6</sup>. <sup>1</sup>ARCO Chemical Co., Newtown Square, PA; <sup>2</sup>Research Triangle Institute, Research Triangle Park, NC; <sup>3</sup>Shell Oil Co., Houston, TX; <sup>4</sup>BP America, Cleveland, OH; <sup>5</sup>Exxon Biomedical Sciences, E. Millstone, NJ; and <sup>6</sup>Union Carbide Corp., Danbury, CT.
- #865 **TRIPROPYLENE GLYCOL N-BUTYL ETHER 13-WEEK DRINKING WATER TOXICITY STUDY IN FISCHER 344 RATS.** *H D Kirk*, *B L Yano*, *K T Haut*, *H G Verschuuren* and *W J Breslin*. The Toxicology Research Laboratory, Dow Chemical Co., Midland, MI.
- #866 **TRIETHYLENE GLYCOL MONOMETHYL ETHER (TGME): A DEVELOPMENTAL TOXICITY STUDY IN THE RABBIT.** *W Krasavage*<sup>1</sup>, *A Hoberman*<sup>2</sup>, *M Christian*<sup>2</sup> and *C Stack*<sup>3</sup>. <sup>1</sup>Health and Environmental Laboratories, Eastman Kodak Company, Rochester, NY; <sup>2</sup>Argus Research Laboratories Inc., Horsham, PA; <sup>3</sup>Chemical Manufacturers Association, Washington, DC.
- #867 **TRIETHYLENE GLYCOL MONOMETHYL ETHER (TGME): A DEVELOPMENTAL TOXICITY STUDY IN THE RAT.** *M Christian*<sup>1</sup>, *A Hoberman*<sup>1</sup>, *W Krasavage*<sup>2</sup>, and *C Stack*<sup>3</sup>. <sup>1</sup>Argus Research Laboratories Inc., Horsham, PA; <sup>2</sup>Health and Environment Laboratories, Eastman Kodak Co., Rochester, NY; <sup>3</sup>Chemical Manufacturers Association, Washington, DC.
- #868 **THE SUBCHRONIC TOXICITY OF TRIETHYLENE GLYCOL MONOMETHYL ETHER (TGME) IN DERMALLY-EXPOSED SPRAGUE-DAWLEY RATS.** *R A Corley*, *F S Cieslak*, *W J Breslin*, *L G Lomax*<sup>\*</sup> and *C R Stack*<sup>\*\*</sup>. The Dow Chemical Co., Midland, MI; <sup>\*</sup>The Rohm and Haas Co., Spring House, PA; <sup>\*\*</sup>Chemical Manufacturers Assoc., Washington, DC.
- #869 **TRIETHYLENE GLYCOL MONOMETHYL ETHER (TGME): NINETY-DAY SUBCHRONIC DRINKING WATER INCLUSION NEUROTOXICITY STUDY IN RATS.** *P E Losco*<sup>1</sup>, *M W Gill*<sup>1</sup>, *J P J Maurissen*<sup>2</sup>, *R A Corley*, *R Gingell*<sup>3</sup>, *C A Stack*<sup>4</sup>. <sup>1</sup>Bushy Run Research Center/Union Carbide Chemical and Plastics Co., Inc., Export, PA; <sup>2</sup>Dow Chemical Co., Midland, MI; <sup>3</sup>Shell Oil Co., Houston, TX; <sup>4</sup>Chemical Manufacturers Association, Washington, DC.
- #870 **COMPARISON OF IN VITRO AND IN VIVO ACUTE TOXICITY DATA USING SELECTED GLYCOL COMPOUNDS.** *L H Coleman* and *S J Northup*. Baxter Healthcare Corporation, Round Lake, IL.

- #871 **RAT AND MOUSE LIVER AND KIDNEY RESPONSE TO INHALED PROPYLENE GLYCOL MONOMETHYL ETHER (PGME).** J S Bus, J W Crissman, T R Fox<sup>1</sup>, J M Redmond, F S Cieslak, R A Corley and W T Stott. Dow Chemical Co., Midland, MI; <sup>1</sup>CIIT, RTP, NC.
- #872 **COMPARATIVE METABOLISM AND DISPOSITION OF 1-METHOXY-2-PROPANOL (PGME) IN MALE FISCHER 344 RATS AND MALE B6C3F<sub>1</sub> MICE FOLLOWING P.O. AND I.V. ADMINISTRATION.** N F Ferrala, J Jouzaitis, G Hetu, B Ghanayem\* and A A Nomeir. Arthur D Little Inc, Cambridge, MA and \*NIEHS, RTP, NC.
- #873 **TWO GENERATION REPRODUCTION STUDY OF COMMERCIAL HEXANE IN RATS.** W Daughtrey<sup>1</sup>, T Neepier-Bradley<sup>2</sup>, J Duffy<sup>3</sup>, L Haddock<sup>4</sup>, T Keenan<sup>5</sup>, C Kirwin<sup>6</sup> and A Soiefer<sup>7</sup>. <sup>1</sup>Exxon Biomedical Sciences, E. Millstone, NJ; <sup>2</sup>Bushy Run Research Center, Export, PA; <sup>3</sup>Texaco Corp., Beacon, NY; <sup>4</sup>UNOCAL Corp., Los Angeles, CA; <sup>5</sup>Ashland Chemical Co., Columbus, OH; <sup>6</sup>Phillips Petroleum, Bartlesville, OK, <sup>7</sup>American Petroleum Institute, Washington, DC.
- #874 **10-DAY INHALATION STUDIES WITH DIMETHYLACETAMIDE (DMAC); EVIDENCE FOR AGE-DEPENDENT LETHALITY AND TESTICULAR TOXICITY IN MICE.** M C Carakostas, S R Frame, M E Hurtt, and R Valentine. Du Pont, Haskell Laboratory for Toxicology and Industrial Medicine, Newark, DE.
- #875 **NEURAL AND PERIPHERAL CELL MEMBRANES AS TARGETS FOR SOLVENT IMPACT.** H Tahti and L Naskali. Dept. Biomed. Sci. Univ. Tampere, Finland. Sponsor: K M Savolainen.
- #876 **INDUCTION OF STYRENE METABOLISM PREVENTS STYRENE-INDUCED HEARING LOSS IN RATS.** G Pryor, C Rebert, K Kassay, N Shinsky, and R Gordon. Neuroscience Dept, SRI International, Menlo Park, CA. Sponsor: J MacGregor
- #877 **INTERACTIVE EFFECTS OF SOLVENTS ON THE RAT'S AUDITORY SYSTEM.** C S Rebert, W K Boyes, D J Svendsgaard, and G T Pryor. Dept. of Neuroscience, SRI International, Menlo Park, CA and Health Effects Research Laboratory, USEPA, Res. Triangle Park, NC.
- #878 **LIVER GLUTATHIONE AND HEPATOTOXICITY IN B6C3F<sub>1</sub> MICE EXPOSED TO STYRENE.** D L Morgan, J F Mahler, H P Price\*, R W O'Connor\*, B A Schwetz. NTP/NIEHS, RTP, NC; and \*METI, RTP, NC.
- #879 **MOUSE SEX AND STRAIN DIFFERENCES IN SUSCEPTIBILITY TO STYRENE TOXICITY.** J F Mahler, D L Morgan, H P Price\*, R W O'Connor\*, B A Schwetz. NTP/NIEHS, RTP, NC; \*METI, RTP, NC.
- #880 **TOXICOKINETICS OF METHACRYLONITRILE IN THE RAT.** K B Demby, T C White, B I Ghanayem. NIEHS/NTP, Research Triangle Park, NC.
- #881 **NINE-AND NINETY-DAY CAPROLACTONE INHALATION STUDIES ON RATS.** J C Norris, D A Neptun, and T R Tyler. Bushy Run Research Center/Union Carbide Chemicals and Plastics Company Inc., Export, PA.

**TUESDAY AFTERNOON, FEBRUARY 25  
CONVENTION CENTER—EXHIBIT HALL.**

## **POSTER SESSION: CHEMICAL INTERACTIONS AND MIXTURES**

**Chairperson:** Stephen M. Roberts, University of Florida, Alachua, FL

**Displayed:** 1:30 p.m.—4:30 p.m.

**Attended:** 1:30 p.m.—3:00 p.m.

- #882 **WOOD DUST EXTRACTS INHIBIT MICROTUBULE ASSEMBLY *IN VITRO* AND INDUCE MICRONUCLEI IN SHEEP SEMINAL VESICLE CELLS *IN CULTURE*.** M Metzler, E Pfeiffer, and R Schnitzler. Dept. of Environmental Toxicology, University of Kaiserslautern, Germany. Sponsor: W Dekant.
- #883 **TOXICOLOGICAL ASSESSMENT OF POLYPROPYLENE THERMAL PROCESS EMISSION.** D A Edwards, D J O'Connor, A W Lington, and B Janke. Exxon Biomedical Sciences Inc., East Millstone, NJ. Sponsor: G F Egan.
- #884 **A NEW APPROACH FOR TOXIC POTENCY MEASUREMENT FOR FIRE HAZARD ANALYSIS.** B C Levin, R G Gann, V Babrauskas, M Paabo, R H Harris, Jr., R D Peacock, and S Yusa. National Institute of Standards and Technology, Gaithersburg, MD.
- #885 **IMMUNOTOXICITY AS A PROBE OF TCDD TOXICITY IN A COMPLEX ENVIRONMENTAL MIXTURE.** J B Silkworth and P W O'Keefe. Wadsworth Center for Laboratories and Research, NYS Dept. of Health, Albany, NY.
- #886 **EXPERIMENTAL DESIGN AND PARAMETER ESTIMATION APPROACHES USEFUL IN ASSESSING THE JOINT ACTION OF MIXTURES WITH EXAMPLES USING HEPATOTOXIC AND NEUROTOXIC ENDPOINTS.** D J Svendsgaard, J E Simmons, E Berman, D W Herr, and W K Boyes. U.S. EPA, HERL Research Triangle Park, NC.
- #887 **THE USE OF THE PARALLEL AXIS SYSTEM IN A STATISTICAL ANALYSIS OF DOSE-RESPONSE SURFACE.** C Gennings, K S Dawson, W H Carter Jr., and D Svendsgaard, J E Simmons. Virginia Commonwealth University, Medical College of Virginia, Richmond, VA and US EPA HERL, Research Triangle Park, NC.
- #888 **CONSTRUCTION AND INTERPRETATION OF ISOBOLOGRAMS FOR COMPLEX MIXTURES.** W H Carter JR., C Gennings, K S Dawson, and D Svendsgaard, J E Simmons. Virginia Commonwealth University, Medical College of Virginia, Richmond, VA and USEPA HERL, Research Triangle Park, NC.



- #889      **RESPONSES OF RATS TO A TWO-WEEK EXPOSURE TO CIGARETTE SMOKE.** *G L Finch, T B Chen, W E Bechtold, K J Nikula, L Kolar, K R Maples, and J R Harkema.* Inhalation Toxicology Research Institute, Albuquerque, NM.
- #890      **ACROLEIN AND CARBON BLACK PARTICLE COEXPOSURES AND ALVEOLAR MACROPHAGE PHAGOCYTOSIS/TNF SECRETORY CAPACITY.** *G J Jakab.* Department of Environmental Health Sciences, The Johns Hopkins School of Hygiene and Public Health, Baltimore, MD.
- #891      **METHANOL POTENTIATION OF CARBON TETRACHLORIDE HEPATOTOXICITY IS DEPENDENT ON THE TIME OF CARBON TETRACHLORIDE ADMINISTRATION.** A McDonald, Y M Sey\*, D E House, *J E Simmons.* HERL/US EPA and \*METI, RTP, NC.
- #892      **HEPATIC AND RENAL TOXICITY FOLLOWING CONCURRENT ORAL EXPOSURE TO TRICHLOROETHYLENE (TCE) AND CARBON TETRACHLORIDE (CCl<sub>4</sub>).** *J E Simmons*<sup>1</sup>, A McDonald<sup>1</sup>, Y M Sey<sup>2</sup>, J C Seely<sup>3</sup>, M B Thompson<sup>4</sup>, D J Svendsgaard<sup>1</sup>. <sup>1</sup>HERL/U.S. EPA, <sup>2</sup>METI, <sup>3</sup>PATHCO, <sup>4</sup>NIEHS/NTP, RTP, NC.
- #893      **EXAMINATION OF THE HEPATIC AND RENAL TOXICITY FROM CONCURRENT ORAL EXPOSURE TO CHLOROFORM AND TRICHLOROETHYLENE.** M Z Lilly<sup>1</sup>, Y M Sey<sup>2</sup>, *J E Simmons*<sup>3</sup>. <sup>1</sup>UNC/ESE/CEMLB, <sup>2</sup>METI, <sup>3</sup>HERL/US EPA, RTP, NC.
- #894      **SUBCHRONIC TOXICITY OF A CHEMICAL MISTURE OF 25 GROUNDWATER CONTAMINANTS IN F344 RATS AND B6C3F<sub>1</sub> MICE.** *R S H Yang*<sup>1</sup>, T Goehl, M R Elwell, *M R Hejtmancik*<sup>2</sup>, J Toft<sup>2</sup>. NIEHS/NTP, Res. Tri. Park, NC, <sup>1</sup>Department of Environmental Health, Colorado State Univ., Ft. Collins, CO, <sup>2</sup>Battelle Columbus Lab., Columbus, OH.
- #895      **EFFECTS OF MONOCHLOROACETATE (MCA) PRETREATMENT ON VINYLIDENE CHLORIDE (VDC) HEPATOTOXICITY: A HISTOLOGICAL STUDY.** J B Wijeweera and *M E Davis.* Department of Pharmacology and Toxicology, West Virginia University, Morgantown, WV.

**TUESDAY, FEBRUARY 25**

**4:00 p.m.-5:00 p.m.**

**CONVENTION CENTER—ROOM 608**

### **EFFECTIVE PRESENTATIONS WORKSHOP**

This complimentary workshop is designed for graduate students, but all are welcome. The one hour session will cover the basic principles of effective oral presentation including organizing the talk, preparing effective visuals and presenting the talk. The workshop will be taught by Dr. Joe L. Mauderly, Director, Inhalation Toxicology Research Institute.

**TUESDAY, FEBRUARY 25**

**5:00 p.m.-6:30 p.m.**

**Please check the calendar or the Sheraton Hotel lobby board for room assignments.**

### **SPECIALTY SECTION MEETINGS (EXCEPT MECHANISMS AND RISK ASSESSMENT)**

**TUESDAY, FEBRUARY 25**

**6:00 p.m.-7:30 p.m.**

**Please check the Sheraton Hotel lobby board for room assignment.**

### **PACIFIC NORTHWEST REGIONAL CHAPTER MEETING**

**WEDNESDAY MORNING, FEBRUARY 26**

**8:30 a.m.-11:30 a.m.**

**CONVENTION CENTER—ROOM 6A**

### **SYMPOSIUM: NUCLEIC ACID-BASED TECHNOLOGY FOR GENE SPECIFIC ANALYSIS OF TOXICOLOGY**

Sponsored by the Molecular Biology Specialty Section

**Chairperson:** Patrick Iversen, Department of Pharmacology, UNMC, Omaha, NE

The overall objectives of this symposium are to: 1) provide information regarding a very fast moving field of study, 2) initiate discussion regarding the use of nucleic acid based technology for gene specific analysis of toxicology, and 3) introduce a relatively simple molecular biology technique to a broad group of toxicologists. Hence, this subject is of considerable interest to individuals in the areas of drug development, molecular biology, and drug safety evaluation. The intention of this symposium is to provide a broad understanding of the use and potential of synthetic oligo nucleotides. The pharmacologic and toxicologic issues that must be considered in preclinical development of antisense oligonucleotides will be discussed, as will the *in vitro* toxicology of antisense oligonucleotides. Studies related to the sequence selective recognition of DNA by equilibrium and covalent binding agents will be presented. Finally, *in vivo* pharmacokinetics will be discussed and the bioavailability will be correlated with *in vivo* efficacy of synthetic phosphorothioate oligonucleotides.

- #896      8:30      **NUCLEIC ACID BASED TECHNOLOGY FOR GENE SPECIFIC ANALYSIS OF TOXICOLOGY: INTRODUCTION.** *P Iversen.* Department of Pharmacology, University of Nebraska Medical Center, Omaha, NE.

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- #897 8:40 **ANTISENSE OLIGONUCLEOTIDE THERAPEUTICS: CONCEPT, TO DISCOVERY, TO DRUGS.** C K Mirabelli. ISIS Pharmaceuticals, Carlsbad, CA.
- #898 9:20 **IN VITRO TOXICOLOGY OF ANTISENSE OLIGONUCLEOTIDES.** R M Crooke. ISI Pharmaceuticals, Carlsbad, CA.
- #899 10:00 **DNA SEQUENCE SELECTIVE BINDING AND BONDING.** B Gold. Eppey Institute for Research in Cancer, Omaha, NE.
- #900 10:40 **NUCLEIC ACID BASED TECHNOLOGY FOR GENE SPECIFIC ANALYSIS OF TOXICOLOGY IN VIVO.** P Iverson. Department of Pharmacology, UNMC, Omaha, NE.

**WEDNESDAY MORNING, FEBRUARY 26**

**8:30 a.m.—11:30 a.m.**

**CONVENTION CENTER—BALLROOM 6C**

## **SYMPOSIUM: MOLECULAR AND CELLULAR MECHANISMS OF CHRONIC LUNG DISEASE**

Sponsored by the Inhalation Specialty Section

**Chairpersons:** Kevin Driscoll, The Procter & Gamble Company, Cincinnati, OH and Debra Laskin, Rutgers University, Piscataway, NJ

Exposure of humans or experimental animals to a variety of toxic agents can result in damage to the lungs and can also exacerbate existing lung abnormalities such as asthma or bronchitis. The ultimate response of the lungs to toxicants is dependent on a number of factors including the activity of cells that act as effectors of lung injury, inflammation and repair. These cells which include macrophages, epithelial cells and fibroblasts respond to environmental challenge by becoming "activated" and releasing soluble mediators that augment tissue injury and modify the functioning of other cells within the lungs. Thus, lung injury results from a complex network of interactions between the various cellular components of the lungs and their mediators. This symposium will focus on the contribution of macrophages, fibroblasts and epithelial cells to toxicant induced lung injury, inflammation and disease. The role of potential mediators of toxicity including: eicosinoids, cytokines, growth factors, and reactive oxygen intermediates, will be discussed. Selective aspects of the response of the lungs to these mediators at the molecular level will also be discussed, as will recent studies illustrating key cell:cell interactions and the associated mediator networks. Finally, the various presentations will show how molecular and cellular interactions in the lung may be significant in the pathogenesis of chronic lung disease.

- #901 8:30 **MOLECULAR AND CELLULAR MECHANISMS OF CHRONIC LUNG DISEASE: INTRODUCTION.** D L Laskin. Rutgers University, Piscataway, NJ.
- #902 8:40 **ROLE OF EPITHELIAL CELL ACTIVATION IN CHRONIC LUNG DISEASE.** G D Leikauf. Pulm. Cell. Biol. Lab., Depts. of Environ. Hlth. and Physio./Biophy., Univ. of Cincinnati Med. Ctr., Cincinnati, OH.
- #903 9:20 **ROLE OF ALVEOLAR MACROPHAGE-DERIVED CYTOKINES IN PULMONARY INFLAMMATION AND FIBROSIS.** K E Driscoll and J K Maurer. Marzani Valley Laboratories, The Procter & Gamble Company, Cincinnati, OH.
- #904 10:00 **ALVEOLAR EPITHELIAL DERIVED GROWTH FACTORS AND CYTOKINES IN LUNG REPAIR AND FIBROSIS.** J N Finckelstein. Univ. of Rochester School of Medicine, Rochester, NY.
- #905 10:40 **CONTRIBUTION OF FIBROBLASTS TO THE REGULATION OF THE INFLAMMATORY RESPONSE.** J Gauldie, K E Driscoll<sup>2</sup>, and M Jordana<sup>1</sup>. Dept. of Pathology<sup>1</sup>, McMaster Univ., Hamilton, Ont, Canada and Procter & Gamble<sup>2</sup>, Cincinnati, OH.

**WEDNESDAY MORNING, FEBRUARY 26**

**8:30 a.m.—11:30 a.m.**

**CONVENTION CENTER—BALLROOM 6B**

## **SYMPOSIUM: SPECIFIC PROTEIN CHANGES AS INDICATIONS OF TOXICOLOGIC MECHANISM**

**Chairperson:** N. Leigh Anderson, Large Scale Biology Corporation, Rockville, MD

Proteins are molecular machines that constitute a vast majority of the working parts of living cells. Changes in protein abundance or structural integrity thus play central roles in the initiation and unfolding of most pathological processes. While current practice in toxicology recognizes the usefulness of numerous specific protein measurements (e.g., cytochromes P-450 or the peroxisomal bifunctional enzyme), it is becoming apparent that a range of more sophisticated protein-bound techniques can contribute significantly to an understanding of the nature and mechanism of toxic effects. As a result of the intensifying requirement to understand the significance of results obtained in standard rodent-based safety assessment protocols, mechanistic information can have significant practical value. In this symposium, four approaches will be described that combine protein chemistry, cell biology and toxicology in an effort to discover and interpret mechanism-related protein alterations. Methods for the detection and characterization of protein-bound drug metabolites will be discussed first, followed by a presentation describing the use of a specific class of proteins (the mammalian "stress"-induced proteins) as early markers of target organ toxicity. The final presentations describe the application of a general technique for detection of protein changes (two-dimensional electrophoresis) to the analysis of genetic and protein level toxicities, respectively. The symposium should provide a useful overview of protein methods applicable to current toxicology problems, as well as an indication of major directions for future research.

- #906 8:30 **SPECIFIC PROTEIN CHANGES AS INDICATIONS OF TOXICOLOGIC MECHANISM: INTRODUCTION.** N L Anderson. Large Scale Biology Corp., Rockville, MD.
- #907 8:40 **IDENTIFICATION AND CHARACTERIZATION OF TARGETS OF TOXIC REACTIVE METABOLITES WITH THE USE OF SPECIFIC ANTIBODIES.** I R Pohl. Laboratory of Chemical Pharmacology, NHLBI, NIH, Bethesda, MD.

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- #908 9:20 **STRESS PROTEIN INDUCTION BY METALS PRECEDES TARGET ORGAN TOXICITY: APPLICATION TO BIOMARKERS OF EXPOSURE AND/OR TOXICITY.** *P L Goering.* Center for Devices and Radiological Health, Food and Drug Administration, Rockville, MD.
- #909 10:00 **HERITABLE PROTEIN CHANGES AS INDICATORS OF GENOTOXICITY.** *C S Giometti.* Argonne National Laboratory, Argonne, IL.
- #910 10:40 **TWO-DIMENSIONAL PROTEIN MAPPING APPLIED TO MECHANISTIC ANALYSIS OF DRUG EFFECTS IN LIVER.** *N L Anderson.* Large Scale Biology Corporation, Rockville, MD.

**WEDNESDAY MORNING, FEBRUARY 26**

**8:30 a.m.-11:00 a.m.**

**CONVENTION CENTER—ROOM 607**

**PLATFORM SESSION: CYTOCHROME P-450: MOLECULAR CHARACTERIZATION AND EXPRESSION**

**Chairperson:** Andrew Parkinson, University of Kansas, Medical Center, Kansas City, KS

- #911 8:30 **DEVELOPMENT AND APPLICATION OF A HUMAN CELL LINE EXPRESSING 5 c DNA'S ENCODING XENOBIOTIC-METABOLIZING ENZYMES.** *C L Crespi, B W Penman, F J Gonzalez, H V Gelboin and R Langenbach.* Gentest Corporation, Woburn, MA, NIH/NCI, Bethesda, MD, NIH/NIEHS, Research Triangle Park, NC. Sponsor: *J Heindel.*
- #912 8:45 **REGULATION OF CYTOCHROME P450 FUNCTION IN CULTURED HUMAN COLONIC CELLS (CACO-2).** *D W Rosenberg, T Leff.* The Rockefeller University, New York, NY.
- #913 9:00 **CHARACTERIZATION OF THE HUMAN CYP1A1 NEGATIVE REGULATORY ELEMENT.** *P D Boucher, R J Ruch, and R N Hines.* Dept. Pharmacology, Wayne State Univ. Sch. Med., Detroit, MI.
- #914 9:15 **HUMAN LYMPHOCYTE CYP1A1 GENE EXPRESSION IN CREOSOTE-EXPOSED RAILROAD WORKERS.** *S J Garte, P Toniolo, B S Pasternack, D Currie, and G N Cosma.* Inst. of Environmental Medicine, New York Univ. Medical Center, New York, NY.
- #915 9:30 **IN VITRO HUMAN AND RHESUS MONKEY HEPATIC PHASE I AND PHASE II METABOLISM.** *M R VandenBranden, J C Stevens, L A Shipley, and S A Wrighton.* Department of Drug Metabolism and Disposition, Eli Lilly and Co., Indianapolis, IN.
- #916 9:45 **INDUCTION OF P450 ENZYMES IN CYNOMOLGUS MONKEYS.** *P L Bullock, R Pearce, J Podval\*, W Bracken\*, J Veltman\* and A Parkinson.* University of Kansas Medical Center, Kansas City, KS, and \*Alcon Laboratories, Fort Worth, TX.
- #917 10:00 **TAMOXIFEN INDUCES HEPATIC CYTOCHROME P450 IIB1 AND IIB2 IN F344 RATS.** *E F Nuwaysir, Y P Dragan, H C Pitot.* Environmental Toxicology Center and the Mc Ardle Laboratory for Cancer Research, University of Wisconsin-Madison, Madison, WI.
- #918 10:15 **EXPRESSION OF CYTOCHROME P-450 IN LIVER NON-PARENCHYMAL CELLS (NPC).** *L Helyar, P Thomas, J D Laskin and D L Laskin.* Joint Graduate Program in Toxicology, Rutgers University, Piscataway, NJ.
- #919 10:30 **BILIRUBIN MAY BE AN ENDOGENOUS SUBSTRATE OF CYP1A1 AND 1A2.** *L J Shore, G B Odell, S Otto, and C R Jefcoate.* Environmental Toxicology Center, Dept. Pediatrics, and Dept. Pharmacology, Univ. Wisconsin, Madison, WI.
- #920 10:45 **CHARACTERIZATION OF P450 ENZYMES INVOLVED IN SENECONINE BIOACTIVATION IN GUINEA PIG LIVER MICROSOMES.** *C L Miranda, R L Reed, and D R Buhler.* Dept. of Agric. Chem., Oregon State University, Corvallis, OR.

**WEDNESDAY MORNING, FEBRUARY 26**

**8:30 a.m.-11:00 a.m.**

**CONVENTION CENTER—ROOM 608**

**PLATFORM SESSION: RENAL TOXICOLOGY**

**Chairperson:** Glen Rush, Eli Lilly Co., Indianapolis, IN and Lois Lehman-McKeeman, The Procter & Gamble, Cincinnati, OH

- #921 8:30 **CYTOTOXICITY OF SIX NEPHROTOXIC AGENTS IN THE RHESUS MONKEY KIDNEY CELL LINE LLCMK2.** *C-P Siegers and M Samblebe.* Institute of Toxicology, Medical University of Luebeck, FRG.
- #922 8:45 **MECHANISM OF 4-AMINOPHENOL GLUTATHIONE CONJUGATE MEDIATED NEPHROTOXICITY.** *L M Fowler, J R Foster and E A Lock.* ICI Plc, Central Toxicology Laboratory, Alderley Park, Macclesfield, Cheshire, UK.
- #923 9:00 **EVALUATION OF RENAL PROXIMAL TUBULAR VACUOLATION IN CYNOMOLGUS MONKEYS FOLLOWING INTRAVE-NOUS INFUSION OF IODIXANOL, A NONIONIC RADIOGRAPHIC CONTRAST AGENT.** *J B Cornacoff, R Everett, E P Harling, D Johnson, N Fetrow, A Sherer, and M McCarthy.* Sterling Research Group, Rensselaer, NY.
- #924 9:15 **EFFECTS OF DIETARY RESTRICTION (DR) ON CHRONIC NEPHROPATHY AND SURVIVAL IN SPRAGUE-DAWLEY (SD) RATS.** *L Gumprecht, C Long, K Soper, P Smith, D Alberts, P Hertzog, J Frank, G Ballam\*, K Keenan.* Merck Sharp and Dohme Research Laboratories, West Point, PA, and \*Purina Mills, Inc. St. Louis, MO.

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- #925 9:30 CHARACTERIZATION OF THE RENAL HANDLING OF p-AMINOHIPPURATE (PAH) IN THE CONSCIOUS BEAGLE DOG. W A Mann, G Welzel, and L B Kinter. SmithKline Beecham Pharmaceuticals, King of Prussia, PA. Sponsor: T Leonard.
- #926 9:45 ACUTE EFFECTS OF CYCLOSPORIN A AND ISOFLURANE ANESTHESIA IN A MODEL OF RENAL TRANSPLANTATION. S A Rice, S J Phillips, K L Allen, G R Gordon, and C A Tyson. SRI International and Failure Analysis Associates Inc., Menlo Park, CA.
- #927 10:00 CORRELATION BETWEEN PLASMA ATRIAL NATRIURETIC PEPTIDE (ANP) AND REDUCED CISPLATIN NEPHROTOXICITY IN RATS. P Ormond, M Basinger, M Jones, and K Hande. Vanderbilt University and Nashville VA Medical Center, Nashville, TN.
- #928 10:15 EVALUATION OF NEPHROTIC EFFECTS OF CHLOROBENZENE COMPOUNDS. K P Baetcke, I S Rodgers, M P Copley, and G C Hard. USEPA, Washington, DC; and American Health Foundation, Valhalla, NY.
- #929 10:30 ACTION OF CHLORMERODRIN ON REABSORPTION OF CYCLOLEUCINE IN THE RABBIT KIDNEY. E C Foulkes and S Blanck. Depts. Environ. Health and Physiol.-Biophysics. Univ of Cincinnati Coll of Med., Cincinnati, OH.
- #930 10:45 HYALINE DROPLET NEPHROPATHY (HDN) INDUCING AGENTS DO NOT BIND TO  $\alpha_2\mu$ -GLOBULIN SUPERFAMILY PROTEINS: IMPLICATIONS FOR HUMAN RISK ASSESSMENT. L D Lehman-McKeeman, D Caudill and N S Miller. Miami Valley Laboratories, Procter and Gamble Co., Cincinnati, OH.

WEDNESDAY MORNING, FEBRUARY 26  
CONVENTION CENTER—ROOM 605

### POSTER DISCUSSION SESSION: RISK ASSESSMENT OF TOXIC AND ESSENTIAL METALS

Chairpersons: Arthur R. Gregory, TECHTO Enterprises, Sterling, VA and Robert A. Goyer, University of Western Ontario, London, Canada

Displayed: 8:30 a.m.—11:30 a.m.

Discussion: 9:30 a.m.—11:30 a.m.

- #931 RISK ASSESSMENT AT TOXIC WASTE SITES WITH METAL CONTAMINATION. M J Wade, and B K Davis. Cal EPA, CA Dept. Toxic Substances Control, Sacramento, CA.
- #932 A RISK ASSESSMENT COMPARING THE CARCINOGENIC AND NONCARCINOGENIC EFFECTS OF URANIUM. E Andersen and M Isley. Clement International, Fairfax, VA.
- #933 IMPACTS OF RECENT DEVELOPMENTS IN ASSESSING ARSENIC TOXICITY AND EXPOSURE ON RISK ASSESSMENT FOR ARSENIC CARCINOGENICITY. C P Boyce, C G Evans, and R A Schoof. PTI Environmental Services, Bellvue, WA.
- #934 RISK OF LUNG CANCER DUE TO AIRBORNE NICKEL EXPOSURE. H Goeden<sup>1</sup>, A Smith<sup>1</sup>, and G Alexeeff<sup>2</sup>. <sup>1</sup>Department of Biomedical Environmental Health Sciences, University of California; and <sup>2</sup>Office of Environmental Health Hazard Assessment, Berkeley, CA.
- #935 CURRENT ISSUES IN ASSESSING THE HEALTH RISKS OF LEAD. J M Davis. Environmental Criteria and Assessment Office, US Environmental Protection Agency, Research Triangle Park, NC.
- #936 A COMPARISON OF METHODS USED TO EVALUATE LEAD EXPOSURE BASED ON BLOOD LEAD LEVELS. L J Lawton, S L Sager, and M K Jones. Geraghty Miller, Inc. Raleigh, NC, and Delta Environmental Consultants, Rancho Cordova, CA. Sponsor: J S Heath
- #937 EVALUATION OF EXPOSURE TO LEAD IN SOIL CONSIDERING DECREASING BACKGROUND LEAD CONCENTRATIONS IN WATER AND AIR. S L Sager, L J Lawton, and M K Jones. Geraghty Miller, Inc., Raleigh, NC and Delta Environmental Consultants, Rancho Cordova, CA. Sponsor: J S Heath.
- #938 MONTE CARLO ANALYSIS OF EXPOSURE TO LEAD IN THE UNITED STATES. C D Carrington and P M Bolger. US FDA, Washington, DC.
- #939 USE OF A POPULATION PHARMACOKINETIC MODEL IN ASSESSING TRIGGER LEVELS FOR LEAD ABATEMENT. S Griffin, and A Marcus. USEPA, Washington, DC and Battelle Memorial Institute, RTP, NC.
- #940 DEVELOPMENT OF AN ORAL REFERENCE DOSE (RfD) FOR SELENIUM: ESSENTIALITY AND TOXICITY CONSIDERATIONS. K A Poirier and G L Foureman. US EPA, Environmental Criteria and Assessment Office, Cincinnati, OH and Research Triangle Park, NC.
- #941 EFFECT OF ZINC (Zn) SUPPLEMENTATION ON COPPER (Cu) ABSORPTION AND SERUM HIGH DENSITY LIPOPROTEIN (HDL) LEVELS. R Cantilli and J Donohue. US EPA, Office of Water, Washington, DC and Life Systems, Inc., Arlington, VA. Sponsor: C O Abernathy.
- #942 DERIVATION OF A LEVEL OF CADMIUM (Cd) FOR MASSACHUSETTS TYPE I SLUDGE. M Harnois, P Locke, M Murphy and C R West. Massachusetts Dept. of Environmental Protection, Boston, MA. Sponsor: D Silverman.

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WEDNESDAY MORNING, FEBRUARY 26  
CONVENTION CENTER—EXHIBIT HALL

## POSTER SESSION: COVALENT BINDING AND ADDUCT FORMATION

Chairperson: Bruce D. Hammock, UC Davis, Davis, CA

Displayed: 8:30 a.m.—11:30 a.m.

Attended: 8:30 a.m.—10:00 a.m.

- #943 INDIGENOUS DNA ADDUCT (I-COMPOUND) FORMATION IN THE PREGNANT RAT AFTER TREATMENT WITH 3-METHYLCHOLANTHRENE (3-MC),  $\beta$ -NAPHTHOFLOAVONE (BNF) AND 2,3,7,8-TETRACHLORODIBENZO-*p*-DIOXIN (TCDD). K T Shiverick<sup>1</sup>, M Qato<sup>2</sup> and H A J Schur<sup>3</sup>. <sup>1</sup>Dept. of Pharmacol. and Therap., Univ. of Florida, Coll. of Med., Gainesville, FL; <sup>2</sup>Dept. of Pharmacol., Univ. of Illinois, Coll. of Med., Chicago, IL; <sup>3</sup>Dept. of Path., Med. Coll. of Ohio, Toledo, OH.
- #944 SYNTHESIS OF S-(2-CHLORO-1,1,2-TRIFLUOROETHYL-2-<sup>3</sup>H)-L-CYSTEINE (<sup>3</sup>HCTFC) AND ITS USE IN COVALENT BINDING STUDIES. M E Fitzsimmons, J W Harris, and M W Anders. Environmental Health Sciences Center and Department of Pharmacology, University of Rochester, Rochester, NY.
- #945 DETECTION OF A DOUBLE ADDUCT OF ALLYL BENZENE 2',3'-OXIDE WITH DEOXYGUANOSINE: KINETICS OF FORMATION. G Luo and T M Guenther. Dept. of Pharmacology, Univ. of Ill., Coll. of Med., Chicago, IL. Sponsor: B S Levine.
- #946 STRUCTURAL CHARACTERIZATION OF THE AMINO ACID ADDUCTS OF BUTYL ACRYLATE. K S Biswas, L T Burka and M L Cunningham. NIEHS, Research Triangle Park, NC.
- #947 CHARACTERIZATION OF DNA ADDUCTS FROM THE REACTION OF CYANOETHYLENE OXIDE WITH NUCLEOSIDES, NUCLEOTIDES, CALF THYMUS DNA, AND OLIGONUCLEOTIDES THAT MODEL MUTATIONAL TARGET SEQUENCES. J M Yates, T R Fennel, M J Turner, L Recio, and S C J Sumner. North Carolina State University, Raleigh, NC and CIIT, RTP, NC.
- #948 DNA ADDUCT FORMATION IN RODENTS EXPOSED TO BENZENE. W Yin, G Li, S Yin. Institute of Occupational Medicine, Chinese Academy of Preventative Medicine, Beijing, China. Sponsor: M T Smith.
- #949 BIOMONITORING EXPOSURE TO ETHYLENE OXIDE AND STYRENE OXIDE BY MEASUREMENT OF THEIR ADDUCTS WITH THE N-TERMINAL VALINE OF HEMOGLOBIN. P B Farmer, E Bailey, and Y S Tang. MRC Toxicology Unit, Surrey, UK. Sponsor: L L Smith.
- #950 FORMATION OF HEMOGLOBIN ADDUCTS OF ACRYLAMIDE AND ITS METABOLITE GLYCIDAMIDE IN HUMAN ERYTHROCYTES. E Bergmark, C J Calleman and L G Costa. Dept. of Environmental Health, University of Washington, Seattle, WA.
- #951 UPTAKE AND DISTRIBUTION OF INHALED TOLUENE DIISOCYANATE: SPECIES COMPARISON. W E Brown, A L Kennedy, T R Wilson, M F Stock, and Y Alarie. Carnegie Mellon University and the University of Pittsburgh, Pittsburgh, PA.
- #952 SEQUENCE-SPECIFIC BLOCKS IN DNA/RNA POLYMERASES INDUCED BY BENZO(a)PYRENE DIOL EPOXIDE. B D Thrall and D L Springer. Battelle Pacific Northwest Laboratory, Richland, WA.
- #953 DNA ADDUCTION *IN VITRO* BY 2-ACETYLAMINOFLUORENE (2AAF) AND 4AAF RELATED TO A RAT LIVER MODEL. R D Combes, S E Willington and A J Smith. Inveresk Research International Ltd, Tranent, Scotland, UK. Sponsor: A B Wilson.
- #954 DETECTION OF BENZO(a)PYRENE (BP) AND 7,12-DIMETHYLBENZANTHRACENE (DMBA) INDUCED DNA ADDUCTS IN CARDIAC TISSUES OF CHICKENS BY <sup>32</sup>P-POSTLABELING. A C Bruch, G G Spencer, S Shedlofsky, and R C Gupta. University of Kentucky, Lexington, KY.
- #955 ANALYSIS OF AFLATOXIN-DNA ADDUCTS USING ELISA AND HPLC. D P H Hsieh, M S Zhao, W E Whitehead, and B D Hammock. Dept. Environmental Toxicology, University of California, Davis, CA.
- #956 MECHANISM OF GENOTOXICITY OF O-PHENYLPHENOL *IN VITRO*: COVALENT MODIFICATION TO DNA BY PHENYL 2,5'-P-QUINONE, A REACTIVE METABOLITE OF O-PHENYLPHENOL. D N Pathak and D Roy. Dept. of Env. Health Sci., School of Public Health, Univ. of Alabama at Birmingham, AL. Sponsor: R G Meeks.
- #957 DIBENZ[a,h]ANTHRACENE(DB[a,h]A)-DNA ADDUCT FORMATION IN THE MOUSE *IN VIVO*, AND IN MOUSE, MONKEY AND HUMAN LIVER SLICES *IN VITRO*. H A J Schur<sup>a</sup>, D A Cummings<sup>a</sup>, J F Klaunig<sup>a</sup>, E L Lin<sup>b</sup> and F B Daniel<sup>b</sup>. Department of Pathology, Medical College of Ohio, Toledo OH<sup>a</sup> and Health Effects Research Laboratory, US EPA, Cincinnati, OH<sup>b</sup>.
- #958 INTERACTION OF A DNA ALKYLATING AGENT CISPLATIN WITH mRNA LEADS TO INHIBITION OF TRANSLATION. P H Sato and J M Rosenberg. Department of Pharmacology and Toxicology, Michigan State University, East Lansing, MI. Sponsor: L J Fischer.
- #959 MICROSOMAL METABOLISM OF 1,2-DIBROMOBENZENE. D E Slaughter, N Narasimhan, L R Hall and R P Hanzlik. Department of Medicinal Chemistry, University of Kansas, Lawrence, KS.
- #960 BENZOQUINONE BINDING TO REDUCED RIBONUCLEASE A AS A "MODEL" PROTEIN TRAP FOR ELECTROPHILES. M M Fraunhoff and R P Hanzlik. University of Kansas, Department of Medicinal Chemistry, Lawrence, KS.

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- #961 **IMMUNOCHEMICAL DETECTION OF A MAJOR DICLOFENAC-PROTEIN ADDUCT IN MOUSE LIVER: POSSIBLE ROLE IN HEPATOTOXICITY.** N R Pumford, J C Davila, T G Myers and L R Pohl. National Heart, Lung, and Blood Institute, National Institutes of Health, Bethesda, MD.
- #962 **COVALENT BINDING OF DICLOFENAC TO PLASMA MEMBRANE PROTEINS OF THE BILE CANICULI IN THE MOUSE.** T G Myers, N R Pumford, J C Davila and L R Pohl. National Heart, Lung, and Blood Institute, National Institutes of Health, Bethesda, MD.
- #963 **BIOTRANSFORMATION OF HALOTHANE TO AN OXIDATIVE INTERMEDIATE THAT COVALENTLY BINDS CYTOSOLIC PROTEIN IN AN *IN VITRO* MICROSOMAL/CYTOSOLIC INCUBATION SYSTEM.** K L Hastings, A P Brown, D C Leiber, A J Gandolfi. Departments of Anesthesiology, Pharmacology and Toxicology, University of Arizona, Tucson, AZ.
- #964 **THE PROTECTIVE EFFECTS OF DITHIOTHREITOL (DTT) ON ACETAMINOPHEN HEPATOTOXICITY ARE ASSOCIATED WITH A DECREASED CAPACITY OF A CELL TO RID ITSELF OF ARYLATED PROTEIN.** D Prechek, R B Birge, W Tonidandell, M K Bruno, S D Cohen, and E A Khairallah. Univ. of Connecticut, Toxicology Program—Depts. of Molecular and Cell Biology and of Pharmacology and Toxicology, Storrs, CT.
- #965 **REPEATED ACETAMINOPHEN (APAP) DOSING RESULTS IN SELECTIVE ARYLATION TO HEPATIC AND RENAL PROTEINS WITHOUT TOXICITY IN THE CD-1 MOUSE.** A Tveit, C Y Leung, S G Emeigh Hart, D S Wyand, E A Khairallah and S D Cohen. University of Connecticut, Toxicology Program: Depts. Pharmacol. Toxicol., Mol. Cell Biol., and Pathobiology, Storrs, CT.
- #966 **DICHLOROMETHANE (DCM): INCORPORATION INTO DNA AND FORMATION OF DNA-PROTEIN CROSS LINKS (DPX) IN MICE AND HAMSTERS.** M Casanova, H D Heck, D F Deyo. CIIT, RTP, NC.
- #967 **HYPERTHYROIDISM DOES NOT INCREASE MICROSOMAL COVALENT BINDING OF 1,1-DICHLOROETHYLENE (DCE) METABOLITES *IN VITRO*.** G H Gunasena and M F Kanz, Department of Pathology, University of Texas Medical Branch, Galveston, TX. Sponsor: M T Moslen.
- #968 **PATIENTS WITH HALOTHANE HEPATITIS HAVE SERUM ANTIBODIES DIRECTED AGAINST GLUCOSE-REGULATED STRESS PROTEIN GRP78/BIP.** J C Davila, B M Martin, and L R Pohl. The National Heart, Lung, and Blood Institute, and National Institute of Mental Health, National Institutes of Health, Bethesda, MD.
- #969 **COVALENT BINDING OF REACTIVE NAPHTHALENE (NA) METABOLITES: NATURE OF THE REACTIVE METABOLITE AND ADDUCTED MACROMOLECULES IN TARGET AND NONTARGET CELLS.** M Cho, C Chichester, D Morin, R Franklin, J Occolowitz, C Plopper and A Buckpitt. Vet. Pharmacology/Toxicology and Anatomy, UC Davis, Davis, CA and Lilly Res. Laboratories, Indianapolis, IN.
- #970 **SPECIFIC PROTEIN COVALENT BINDING OF BENZO(A)PYRENE, AND ITS MODULATION BY GLUCURONIDATION, IN HUMAN LYMPHOCYTES.** Z Hu, and P G Wells. Department of Pharmacology and Faculty of Pharmacy, University of Toronto, Toronto, Ontario, Canada.
- #971 **A HUMAN CARCINOGENIC POTENCY FACTOR FOR PROPYLENE OXIDE BY INHALATION.** R Nilsson, D Segerback, S Osterman-Golkar, B Molholt, and E Sargent. Univ. of Stockholm; ERM, Exton, PA; and Merck & Co, Rahway, NJ.
- #972 **NECHLOROFLUOROTHIOACETAMIDYL-LYSINE (CFTA-LYS) FORMATION IN PROTEIN BY S-(2-CHLORO-1, 1,2-TRIFLUOROETHYL)-L-CYSTEINE (CTFC).** D M Dulik<sup>3</sup>, P J Hayden<sup>1</sup>, M Fisher<sup>1</sup>, W H Schaffer<sup>2</sup>, Y Yang<sup>2</sup>, A J I Ward<sup>2</sup> and J L Stevens<sup>1</sup>. <sup>1</sup>W Alton Jones Cell Science Center, Lake Placid, NY; <sup>2</sup>Clarkson University, Potsdam, NY and <sup>3</sup>SmithKline Beecham Pharmaceuticals, King of Prussia, PA.
- #973 **DIFLUOROTHIAOMIDYL-LYSINE (DFTA-LYS) ADDUCT FORMATION CORRELATES WITH NEPHROTOXIC DAMAGE FROM S-(1,1,2,2-TETRAFLUOROETHYL)-L-CYSTEINE (TFEC).** S A Bruschi, T Ichimura, L R Pohl and J L Stevens. W Alton Jones Cell Science Center, Lake Placid, NY, National Institutes of Health, Bethesda, MD.

WEDNESDAY MORNING, FEBRUARY 26  
CONVENTION CENTER—EXHIBIT HALL

## POSTER SESSION: METHODS

Chairperson: Douglas J. Ball, Boehringer Ingelheim Pharmaceuticals, Ridgefield, CT

Displayed: 8:30 a.m.—11:30 a.m.

Attended: 10:00 a.m.—11:30 a.m.

- #974 **A PROTOCOL FOR DOSE SELECTION IN REPEAT DOSE TOXICITY STUDIES.** N W Spurling, and P F Carey. Glaxo Group Research Ltd., Ware, Herts, Great Britain. Sponsor: J S Allen.
- #975 **FEASIBILITY OF USING LESS THAN TWO SPECIES, TWO SEXES OF RODENTS IN CARCINOGENICITY TESTING OF SELECTED CHEMICALS.** D Y Lai and B Hughes. US Environmental Protection Agency, Washington, DC and Research and Evaluation Associates, Inc., Chapel Hill, NC.
- #976 **BODYWEIGHT OR BODYWEIGHT GAIN AS A MEASURE OF EFFECT SIZE: IMPLICATIONS FOR MTD ASSESSMENT.** I Pate. ICI PLC, Central Toxicology Laboratory, Alderley Park, Macclesfield, Cheshire, UK. Sponsor: P M D Foster.